

# American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

DECEMBER 1980 / \$2.00



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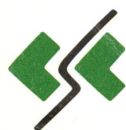






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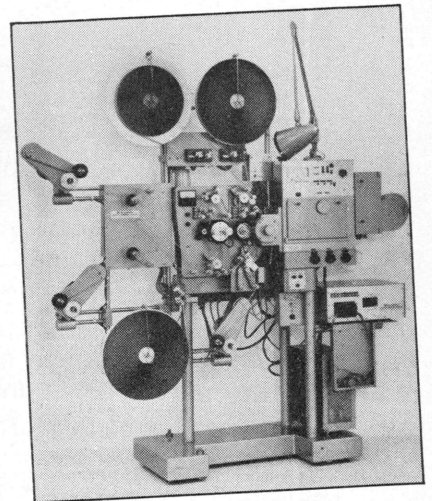
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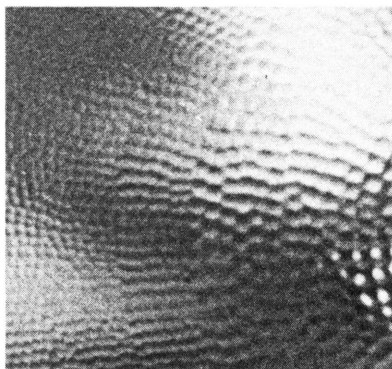
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ON THE COVER: A collage symbolizing *PHOTOKINA 1980*, the World's Fair of Photography held recently in Cologne, West Germany. The famed photographic trade fair, held every two years, is held in a vast complex of 14 exhibition halls located on the banks of the Rhine River.



# "Pins on location." Ron Dexter talks about shooting TV spots with the Arriflex 35-3.

To shoot *one* TV commercial on location, Mr. Dexter needs (at different times) high and low speeds, pin-registration, crystal-control for his HMI lights, compact size and sync sound. He owns two Arriflex 35 Type 3 cameras.



Camerman/Director Ron Dexter (seen above with his crew and Arriflex 35-3 camera) is a member of NABET and the Directors Guild.

**"W**e use both high and low speeds," says Ron Dexter. "With the 2C, if you wanted 12 frames per second, it was next to impossible. You couldn't get a steady speed that slow. With the ARRI 3, it's duck soup."

"On a TV spot for Burger King, we shot a 'magic basketball player' at 8 and 12 frames. He moved at normal speed; everybody else on the court moved extra slowly. Projected at 24, he seemed supernaturally fast. Then we had a shot of him slam-dunking the ball, at 100 frames."

## **Speed!... Action!**

"In the old days, when you shot at high speed, you'd crank the camera up to speed. Then somebody said: *Speed*. Then somebody said: *Action*. That took about four seconds. Now, I roll and one second later I say: *Action*. At 80 frames per second, we save about fourteen feet of film."

## **At high speed, the 35-3 pays for itself.**

"At 80 frames, twelve camera starts like that with the ARRI 3 save us enough, in raw stock and lab costs, to pay for a day's rental on the camera. At 100 frames, the camera pays for itself in about nine takes. We've made that many before lunch."



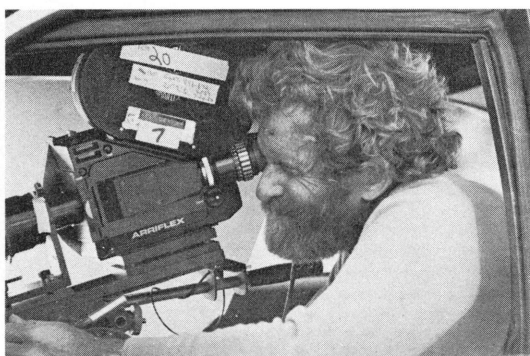
Of course, we're not renting the ARRI 3," says Mr. Dexter, "We *own* two of them — plus four old 35-2Cs."

**Same magazines,  
same lenses as 35-2C.**

"The four 2Cs are four more reasons for buying the ARRI 3s. We can use the same magazines, same lenses. We often use multiple camera setups. Standardization helps there, too. We shot a stuntman (playing The Burger King) riding a bull. Stuntmen charge you by the take. We shot him with two ARRI 3s — one at 100 frames, the other at 50. We also had a 2C running at 24."

**We'll loop it. No  
need, says soundman.**

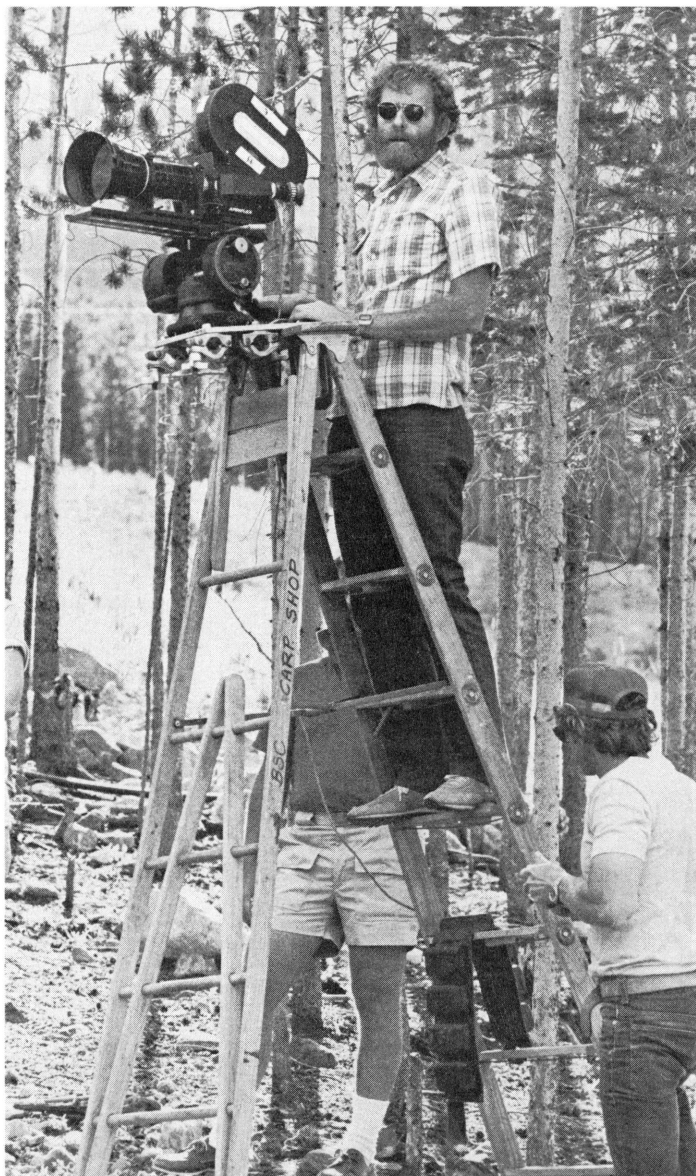
"We recently made a Chevrolet Malibu spot on location in Michigan. There was one solitary lip-sync line in the whole shoot. It wasn't worth taking out a sync-sound camera just for that. It was a chest shot. The ARRI 3 was about eight feet from the actor. We had a shotgun mic two feet from him. I told the soundman: *We'll loop it.* He said: *No need — it's good.*"



**Dexter shoots closeup inside car. For him, 35-3 is an all-purpose tool that is, among its other virtues, compact.**

**Crystal for HMIs.**

"I'm using HMIs a lot," says Mr. Dexter. "I take a small 4.5 kilowatt generator on location with me, and a couple of 1.2K lights. When a cloud comes over, I can substitute the HMIs for sun backlight and continue shooting. This last winter there were two rainy days when we should have wrapped and gone home. Both days, we tented under clear Visqueen and shot everything we needed; there were no pickups. For HMIs, you need a crystal motor; the ARRI 3 has that built in."



**"I need a registered camera," says Mr. Dexter. "The ARRI 3 gives me pins on location." The 35-3 camera body weighs only 12 pounds.**

**Pins on location.**

"There are supers in almost every commercial," says Mr. Dexter. "I need a registered camera. The ARRI 3 gives me pins on location, inside a lightweight, compact M.O.S. camera. With the *same camera, same motor*, I can shoot high speed, too — and even exterior sync sound, sometimes. Not bad."

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# TALKING TECHNICALLY

By DAVID W. SAMUELSON

## CALCULATING DEPTH OF FIELD

The difference between men and boys is the price of their toys, they say, and undoubtedly the best toy I've been given for a long time is a wrist watch calculator.

It set me to thinking of all the calculations that can be done with it as an aid to cinematography, aside from the obvious ones, like working out overtime, etc.

A good example is a Focus Split.

A typical scene calls for two objects at different distances to be held in equally sharp focus. To what distance should the lens be set?

My friend Bill Pollard, who designed the Samcine and Kelly Calculators, taught me that the split focus distance =

$$\frac{2 \times \text{nearest distance} \times \text{farthest distance}}{\text{nearest distance} + \text{farthest distance}}$$

For example, for a particular two-shot, one person is 6 ft. 8 in. from the camera and the other 8 ft. 4 in. What is the split focus distance?

Firstly, you have to reduce that to common units, like 6.66 ft. and 8.33 ft, or easier still, 80 and 100 inches. Let's use the inches one.

Then you enter it into the calculator thus:

Key Sequence	Example	Display
Enter nearest distance	80	80
Touch +	+	80
Enter farthest distance	100	100
*Touch ÷	÷	180
Touch =	=	0.0055555
Touch x	x	0.0055555
Enter 2	2	2
Touch x	x	0.011111
Enter nearest distance	80	80
Touch x	x	0.088888
Enter farthest distance	100	100
Touch =	=	88.8888

Answer: 89 inches, near as dammit, or 7 ft. 5 in.

A useful aspect of this particular calculation, incidentally, is that the same formula can be used for feet, inches or meters without having to change anything.

Another useful one to know how to work out on a calculator is hyperfocal distance <sup>(H)</sup>, because not only is it the distance to which a lens must be set to ensure that infinity and a distance half that to which the lens is focussed are equally sharp, but it is an essential ingredient for all depth of field calculations.

Hyperfocal distance in feet	$= \frac{\text{Focal length}^2(\text{mm}) \times 0.000129}{\text{Circle of confusion (in.)} \times \text{stop value}}$
Hyperfocal distance in meters	$= \frac{\text{Focal length}^2(\text{mm}) \times 0.001}{\text{Circle of confusion (mm)} \times \text{stop value}}$

(Note, these particular formulae for hyperfocal distance make it possible to enter lens focal lengths in millimeters and the circle of confusion in decimal parts of an inch or millimeters and get the answer directly in feet or meters.)

The next question to arise is what circle of confusion to work to? The lower the value, the greater the depth of field; the higher, the less the depth of field. The answer is purely subjective. One works to whatever value is acceptable.

For shots using an early zoom lens and/or fog, diffusion or star filters or nets etc., with soft smoochy lighting and no action or anything brightly lit in the foreground or background, then 1/500 or 0.002 in. (0.05mm) is adequate, but shooting with modern sharp lenses with no diffusion, and contrasty lighting, then even 1/1000 or 0.001 in. (0.024mm) may not be small enough. There's no magic number, it all depends on what looks acceptable on the screen in the circumstances.

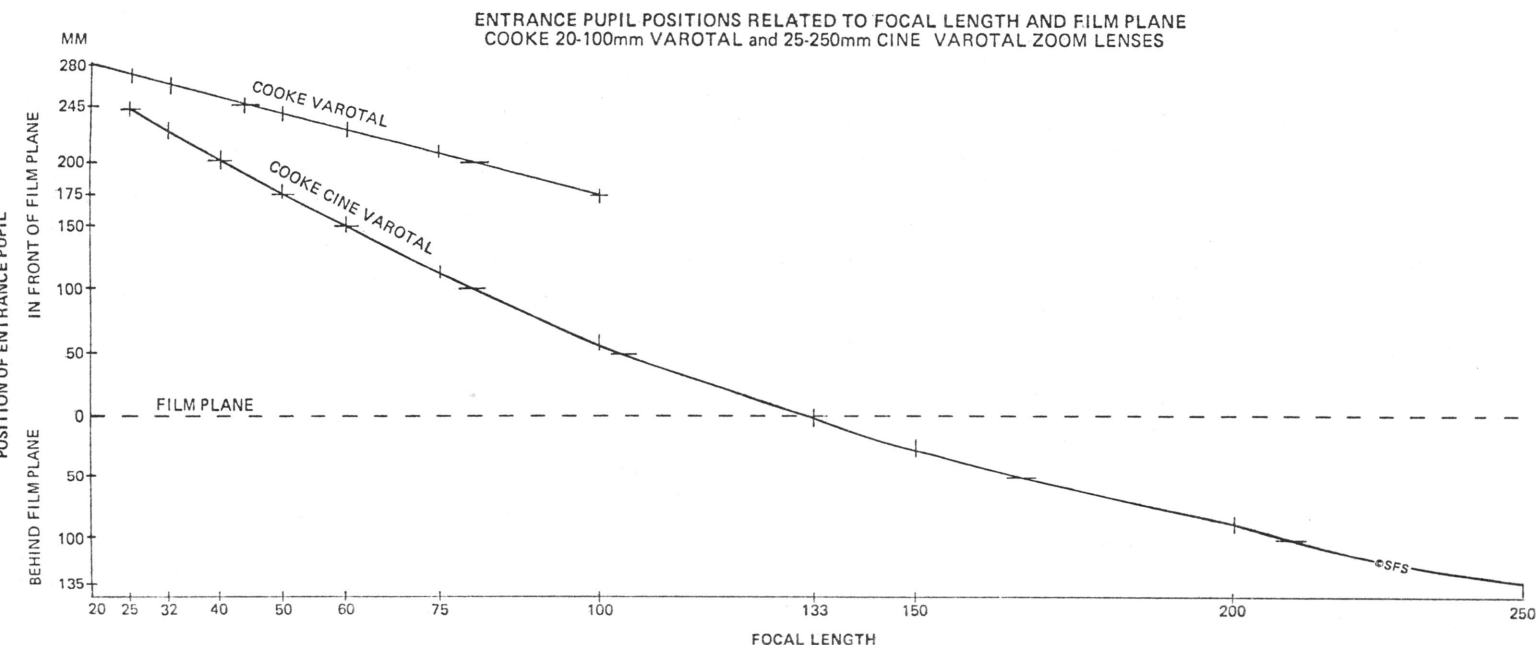
Taking a compromise figure of 1/700 or 0.0014 in. (0.35mm) and a lens focal length of 100mm and a focus distance of 10 ft. at f/8, the way to calculate hyperfocal distance is:

Key Sequence	Example	Display
Enter lens focal length (mm)	100	100
Touch x	x	100
**Touch = (to square)	=	10000
Touch x	x	10000
Touch 0.000129	0.000129	0.000129
Touch ÷	÷	1.29
Enter circle of confusion	0.0014	.0014
Touch ÷	÷	921.42857
Enter stop value	8	8
Touch =	+	115.17857

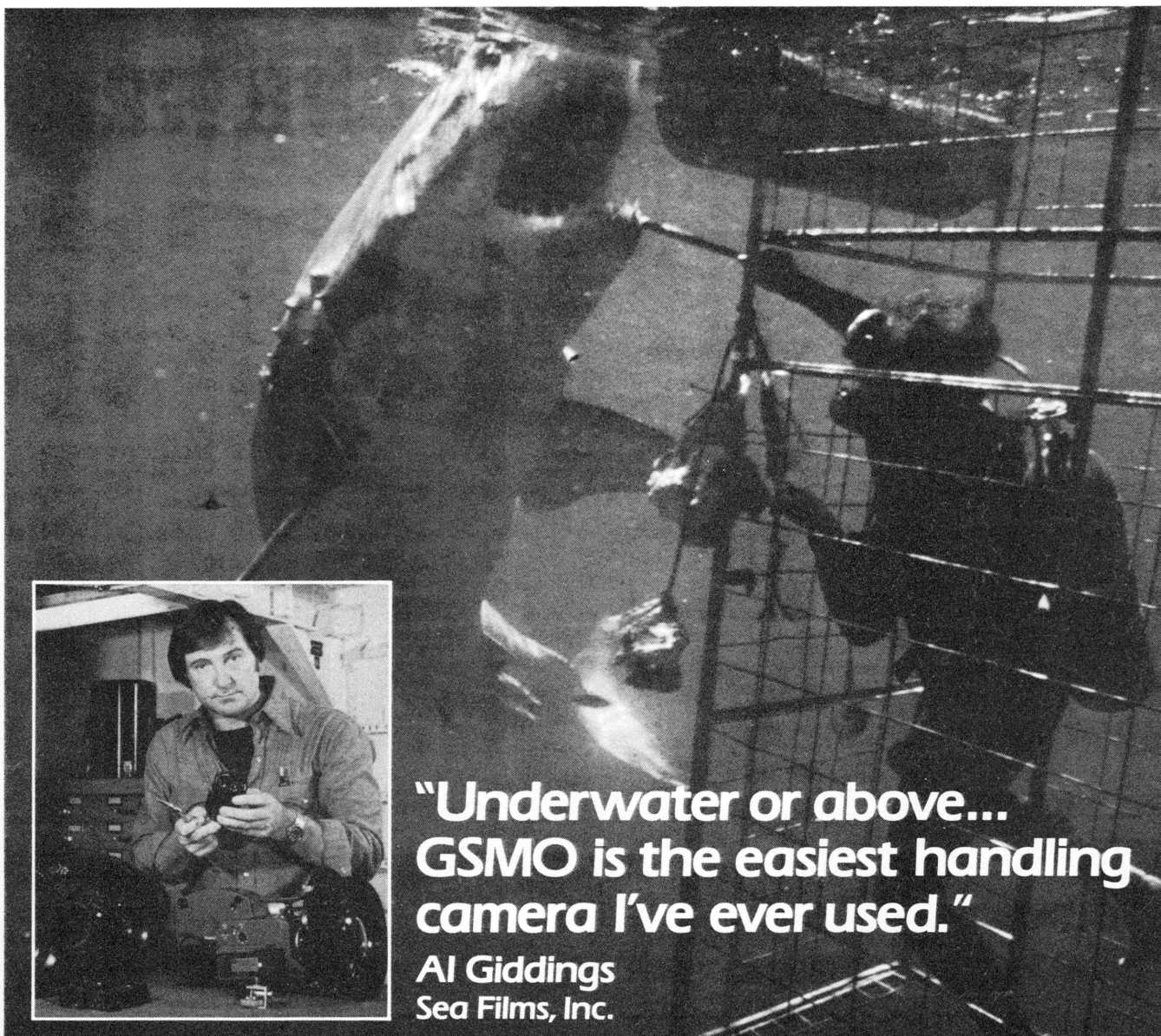
Answer: 115 ft.

An interesting thing about the hyperfocal distance is that having worked out (or looked up) the hyperfocal distance for a particular focal length lens at a particular circle of confusion and aperture, it is very easy to work out what it would be at another stop because it is proportional. In the instance above at f/4 the figure would be 230 ft. and at f/16 it would be 57 ft. 6 in. In fact, if you note down what it would be at f/1 (14.375 ft), then for any other aperture you just multiply by the stop

Continued on Page 1222







**"Underwater or above...  
GSMO is the easiest handling  
camera I've ever used."**

**Al Giddings  
Sea Films, Inc.**

"Cinema Products' GSMO is a superb camera. Ideal for the kind of work I specialize in—underwater cinematography. It is the most lightweight, low-profile, easiest handling camera I've ever used. Underwater or above!" says veteran cinematographer Al Giddings, famous for his underwater cinematography on *"The Deep"* and *"Dive to the Edge of Creation."* Most recently, his outstanding cinematography for *"Mysteries of the Sea"*—the two hour prime time ABC Television Network Special—earned him an Emmy Award.

A major portion of the underwater footage in *"Mysteries of the Sea"* was shot using two GSMO cameras, equipped with special underwater housings designed by Al Giddings and manufactured by Sea Films, Inc., his San Francisco-based company.

"Equipped with its special ultra-lightweight housing (approximately half the weight of conventional underwater systems) and fully-loaded 400' magazine, GSMO weighs a mere 8 ounces in the water," says Giddings. "Easily handled with one hand."

"At locations around the world, including the Indian Ocean, South Australia and California, approximately 65,000 feet of color negative was shot at speeds ranging from 12 to 64 fps. Although for the most part we used the GSMO cameras for underwater sequences, I've also used the GSMO for topside sync shooting with outstanding results," says Giddings.

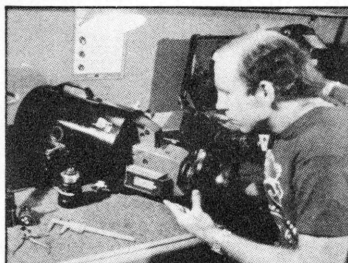
"Filming those dramatic 'high-voltage' shark sequences, we ran the two GSMO cameras at 64 fps consistently without a hitch. The quality of the images was superb. The cameras worked flawlessly. And I couldn't have been happier with the results!"

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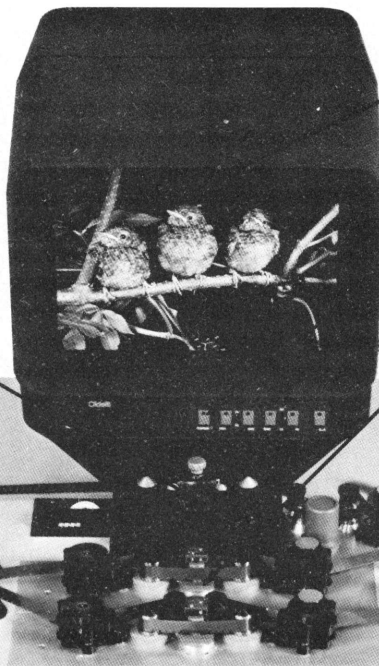
*In the machine shop aboard the R/V EAGLE, Sea Films technician Pete Romano inserts the GSMO into its specially designed underwater housing. The GSMO Underwater Camera System accepts Angenieux 5.9mm as well as Cinema Products Ultra T 9mm and 25mm prime lenses.*



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**2 Documentary:** Finished 16 mm film. \$4,500 awarded in scholarships. Plus first place winner receives a 1981 Datsun 210 and \$1,000 in sound equipment from Shure Bros. Inc. for

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**3 Screenwriting:** Original feature-length screenplays. \$4,500 awarded in scholarships. First place winner receives an internship at National Lampoon's motion picture division, a 1981 Datsun 210 and \$1,000 in sound equipment from Shure Bros. Inc. for his or her college or university. SPONSORED BY NATIONAL LAMPOON. Board of Judges: Lewis Allen, Tony Bill, Lanny Colter, Garson Kanin, Michael Weller.

**4 Producer's Award:** Finished 16 mm film. \$1,500 cash award and \$1,000 in sound equipment from Shure Bros. Inc. for his or her college or university. SPONSORED BY ALLAN CARR ENTERPRISES. Board of Judges: Allan Carr.

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**6 Film Editing:** Finished 16 mm film. \$1,000 scholarship. Plus \$1,000 in sound equipment from Shure Bros. Inc. for his or her college or university. SPONSORED BY MAGNASYNC/ MOVIOLA CORPORATION. Board of Judges: Margaret Booth, Ron Ellis, Verna Fields, Alan Heim, Barry Nye.

## Competition Deadline: February 2, 1981.

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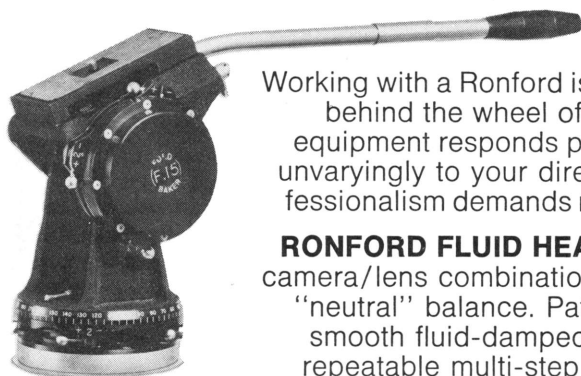
**Ceremony:** All winners will be flown, expenses paid, to Los Angeles for the FOCUS '81 Premiere and Award Ceremony which is conducted in association with the L.A. International Film Exposition (FILMEX). Accommodations will be provided by the Los Angeles Bonaventure Hotel.

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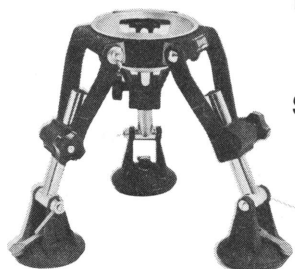
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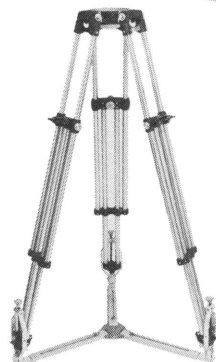


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## THE BOOKSHELF

By GEORGE L. GEORGE

### GENRES AND TECHNIQUES

The process of filmmaking is examined in three utterly disparate cases. The production of *Casablanca* is covered with verve and insight by Charles Francisco in *YOU MUST REMEMBER THIS*, an account of a chaotic enterprise that evolved unexpectedly into a classical movie (Prentice-Hall \$10). In *THE PHOTOGRAPHS OF CHACHAJI*, director Ved Mehta describes the problems of filming in India the documentary *My Poor Relations* (Oxford U. Press \$15.95). The making of *The Picasso Summer*, a partly animated film based on the painter's work, is told with uninhibited and disarming egomania in *RESURRECTION IN CANNES* by director Wes Herschensohn (Barnes \$14.50).

Unreality and supernaturalness in cinema are viewed in three stimulating volumes. *THE WORLD OF FANTASY FILMS* by Richard Meyers covers effectively over 150 movies with occult, sci-fi and horror themes (Barnes \$17.50). In *THE LIMITS OF INFINITY*, Vivian Carol Sobchack offers an engrossing analysis of the nature and appeal of science fiction films, noting the evolution of the genre in a knowledgeable assessment of its variety (Barnes \$14.50). J. H. Matthews ferrets out in *SURREALISM AND AMERICAN FEATURE FILMS* the influence of surrealist concepts and tastes in numerous Hollywood films, from Albert Lewin's *Pandora and the Flying Dutchman* to the Marx Brothers' *Duck Soup* and Marty Feldman's *The Last Remake of Beau Geste* (G. K. Hall \$9.95).

Herbert Kalmus's long struggle to bring color to the screen is compellingly told in Fred B. Basten's well-researched *GLORIOUS TECHNICOLOR*, a superb volume tracing the company's history in its business and personal aspects (Barnes \$30).

Photographer Laszlo Moholy-Nagy's pioneering work, starting in the 1920s in search of a "new vision" attuned to the revolution in painting, architecture and other arts, is knowledgeably explored by Andreas Haus in *MOHOLY-NAGY: PHOTOGRAPHS AND PHOTOGRAMS*, a collection of masterful examples of his innovative techniques (Atheneum \$35).

A basic guide for anyone seeking proficiency in the domain of sound in motion picture and audio-visual production, Paul



M. Honoré's **A HANDBOOK OF SOUND RECORDING** provides a reliable source of factual information on the theory and practice of the craft (Barnes \$15.95).

A step-by-step approach to movie writing, Rolando Giustini's **THE FILM SCRIPT** effectively handles the successive stages involved—concept, outline, treatment, screenplay, shooting script, and storyboarding. Dealing with one screenplay throughout the book, progress is charted in clear and practical fashion (Prentice-Hall \$12.95/6.95).

★ ★ ★

## ASPECTS OF CINEMA

In **REALISM AND THE CINEMA**, editor Christopher Williams presents a symposium of views and theories on this extensively debated issue, juxtaposing pertinent excerpts from the writings of Eisenstein, Grierson, Flaherty, Dziga Vertov, Rossellini and others for a critical comment on the style, ideology and techniques of realism in films (Routledge & Keegan Paul \$11.95).

A stimulating and insightful study of the movies' beginnings at a time of rapid change in American society, Lary May's **SCREENING OUT THE PAST** examines the confluence of the birth of mass culture and that of the motion picture industry (Oxford U. Press \$19.95).

Packed with lively anecdotes, historic facts and revealing stills, **HOLLYWOOD: LAND AND LEGEND** unfolds the tale of an unassuming piece of Southern California real estate that became the film capital of the world. Assembled by Zelda Cini and Bob Crane, it is an intriguing chronicle of adventure, purpose and luck (Arlington \$19.95).

Ken Barnes, in **THE CROSBY YEARS**, gives a total picture of the performer's accomplishments. A biography, a comprehensive filmography and discography, and a personal tribute by the author, producer of six Crosby albums, round out an attractively presented book (St. Martin's \$12.95).

Art patron Peggy Guggenheim's reminiscences in **OUT OF THIS CENTURY** offer a vivid inside look at the artistic, literary and film world of her times, a 60-year adventure that she evokes with gossipy flamboyance and a shrewd perception of people and events (Doubleday/Anchor \$8.95).

A guide for parents and teachers to entertainment films for children, **MOVIES FOR KIDS** is a thoroughly annotated list of some 400 movies, com-

plied by Ruth M. Goldstein and Edith Zornow, providing reliable advice in programming (Ungar \$14.95/5.95).

Leonard Maltin's thoroughly updated and revised 1981-82 edition of **TV MOVIES** lists and describes over 13,000 films currently shown on television, plus 1300 made-for-TV movies. An indispensable guide to informed, selective viewing (Signet/NAL \$3.95).

Cobbett Steinberg's twin volumes, **FILM FACTS** and **TV FACTS** contain abundant, well-documented information that supplies fans and students with a generous digest of statistics, lists and surveys about industrial, artistic and human facets of both media (Facts On File \$17.95 ea.).

★ ★ ★

## FILM AND LITERATURE

The relationship between movies and literature is discussed in two challenging books. Gabriel Miller, in **SCREENING THE NOVEL**, perceptively re-evaluates eight neglected authors whose works inspired such films as *Paths of Glory*, Humphrey Cobb/Stamley Kubrick; *The Pawnbroker*, E. L. Wallant/Sidney

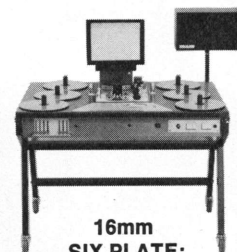
Lumet; and *They Shoot Horses, Don't They?*, Horace McCoy/Sidney Pollack (Ungar \$9.95). In **FILM AND FICTION**, Keith Cohen presents an overview of the change/exchange between artistic disciplines, a scholarly work that ascribes to cinema a radical effect on the novel (Yale U. Press \$12.50).

In **THE MOVIE QUOTE BOOK**, Harry Haun excerpts from over 500 movies memorable dialogue, witty remarks or emotional outbursts, a total of some 4000 quotes that provide the twin pleasures of fond recognition and intellectual stimulation (Harper & Row \$22).

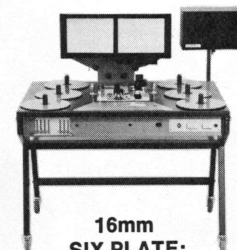
Literary achievements of many film/TV personalities are included in **CONTEMPORARY AUTHORS** (Vol. 93-96), listing plays, screenplays, autobiographies and articles by Lauren Bacall, Jean-Luc Godard, Orson Welles, Jimmy Durante, Joan Blondell and many more. Biographical sketches and interviews complete this substantial volume edited by Frances C. Locher (Gale \$54).

Jonathan Rosenbaum, in his affecting book of reminiscences **MOVING PLACES: A LIFE AT THE MOVIES**, evokes with wistful nostalgia and perceptive awareness films of the 50s and 60s that enchanted his adolescent years (Harper/Colophon \$11.95/5.95). ■

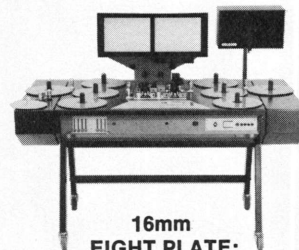
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"I like to shoot color as if it were black-and-white. I deal with lighting ratios in about the same way. I don't like blue because I feel it's a vulgar color on the screen—royal blue, sky blue. (I can't do

anything about the sky, unfortunately.) Yellow is another color that takes over. Anything that pulls your eye off the acting is a mistake. Relativity is important. Going from light to dark and dark to light; big to small, small to big. That's a part of life. It's good filmmaking.

"There are two kinds of visuals on the screen today. One is camera work. The other is photography. Most contemporary pictures aren't photographed, they're recorded. There's no point of view.

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"There is no such thing as a good movie by mistake. Old Bogart movies, for instance, were never designed as art. They were designed to sell tickets. Studios got the best directors and writers, fine cameramen, so the stars looked great, and the best composers to write the music. People look back and tend to make art out of those movies. What they were is very, very well crafted. I believe movies should be done that way today. The art comes out of the craft.

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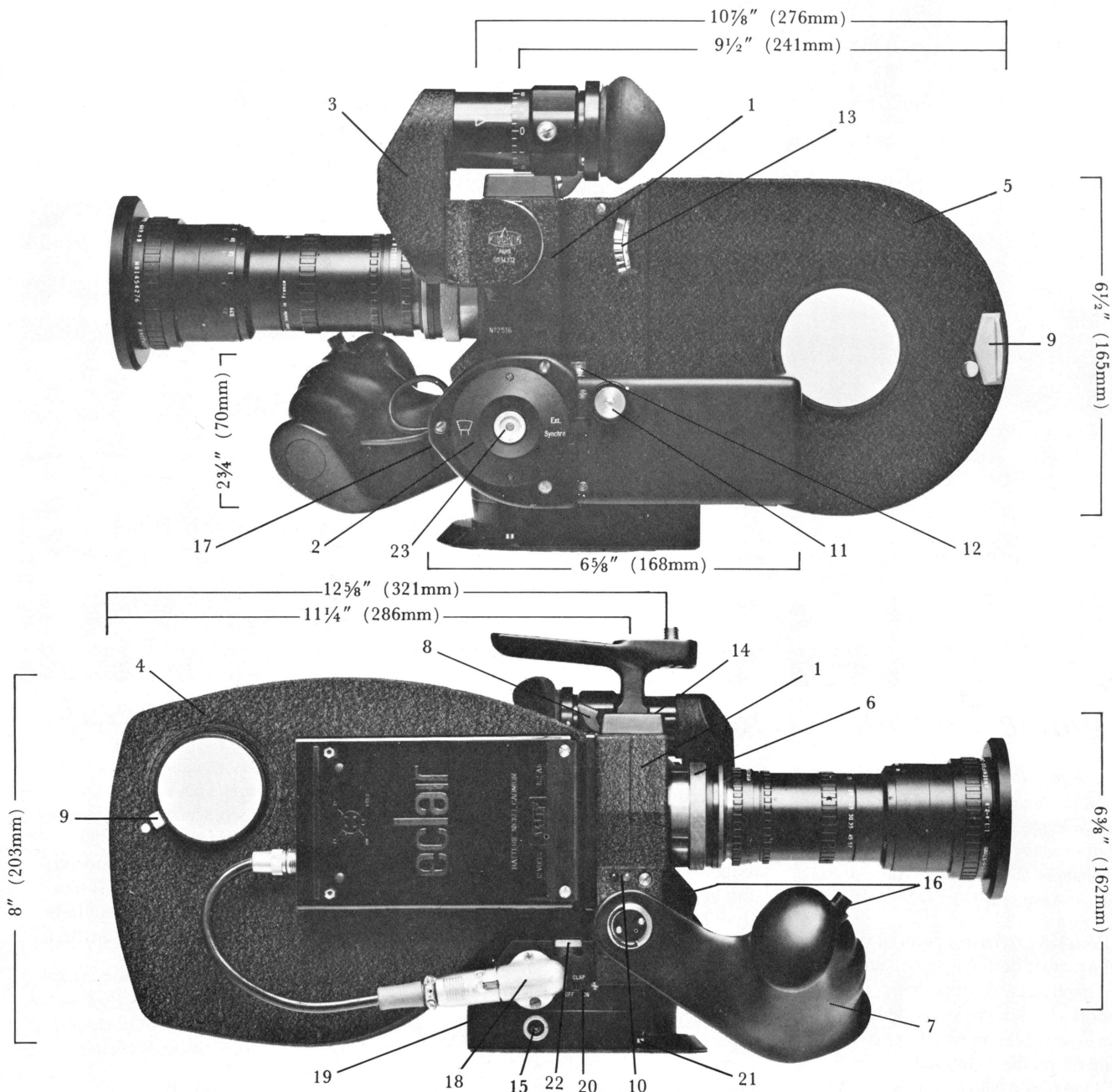
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*Gail Lawrence, left, Andy Garroni, Co-Producer, center, Bill Lustig, Director/Producer.*

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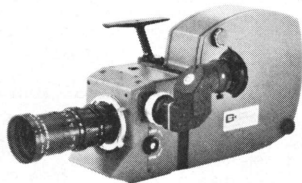
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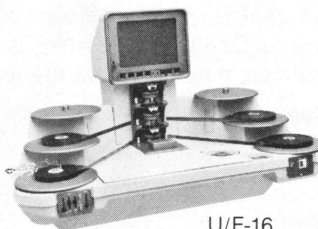
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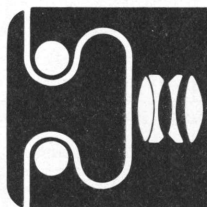
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## TALKING TECHNICALLY

### Continued from Page 1206

number.

Having got the hyperfocal distance, then you can work out the depth of field with the following simplified formulae:

- 1). Nearest distance =  $\frac{\text{Hyperfocal distance} \times \text{distance focussed}}{\text{Hyperfocal distance} + \text{distance focussed}}$  in acceptable focus
- 2). Farthest distance =  $\frac{\text{Hyperfocal distance} + \text{distance focussed}}{\text{Hyperfocal distance} - \text{distance focussed}}$  in acceptable focus

Taking an instance with the same 100mm lens at f/8 focussed on 20 ft., the near distance is:

Key Sequence	Example	Display
Enter hyperfocal distance	115	115
Touch +	+	115
Enter distance focussed	20	20
*Touch ÷	÷	135
Touch = (to find reciprocal)	=	0.0074074
Touch x	x	0.0074074
Enter hyperfocal distance	115	115
Touch x	x	0.851851
Enter distance focussed	20	20
Touch =	=	17.03702

Answer 17 ft.

The far distance is:

Key Sequence	Example	Display
Enter hyperfocal distance	115	115
Touch -	-	115
Enter distance focussed	20	20
*Touch ÷ (to find reciprocal)	÷	95
Touch =	=	0.0105263
Touch x	x	0.0105263
Enter hyperfocal distance	115	115
Touch x	x	1.2105245
Enter distance focussed	20	20
Touch =	=	24.21049

Answer 24 ft. 2½ inches.

Depth of field = 7 ft. 2½ in.

(Note: if the distance focussed is greater than the hyperfocal distance, the far distance is infinity and does not have to be calculated.)

These formulae, whilst reasonably accurate for all normal lenses, particularly when the point of focus is twenty times the lens focal length or more, are not accurate for the wide angle end of zoom lenses at close focussing distances. For lenses which are physically long, an expanded equation, which takes into consideration the position of the entrance pupil relative to the focal plane, must be used.

The reason for this is that depth of field is calculated from the entrance pupil of a lens and we cameramen measure our focus from the focal plane. At far distances this discrepancy is negligible and does not present a problem, but for close focussing, especially for zoom lenses (where the front entrance pupil may well be 11 inches in front of the focal plane at the wide angle end and 5 inches behind the focal plane at the long end) the differences can be quite significant.

A formula for Depth of Field which is accurate in practice for close distances measured from the focal plane is:

where the front entrance pupil is *in front* of the focal plane

$$\begin{aligned} \text{Nearest distance} &= \frac{(\text{Hyperfocal distance} + a) \times \text{focussed distance}}{(\text{Hyperfocal distance} - a) + \text{focussed distance}} \\ \text{in acceptable focus} & \\ \text{Farthest distance} &= \frac{(\text{Hyperfocal distance} + a) \times \text{focussed distance}}{(\text{Hyperfocal distance} - a) - \text{focussed distance}} \\ \text{in acceptable focus} & \end{aligned}$$

and where the front entrance pupil of the lens falls *behind* the focal plane the following formulae must be used:

$$\begin{aligned} \text{Nearest distance} &= \frac{(\text{Hyperfocal distance} - a) \times \text{focussed distance}}{(\text{Hyperfocal distance} + a) + \text{focussed distance}} \\ \text{in acceptable focus} & \\ \text{Farthest distance} &= \frac{(\text{Hyperfocal distance} - a) \times \text{focussed distance}}{(\text{Hyperfocal distance} + a) - \text{focussed distance}} \\ \text{in acceptable focus} & \end{aligned}$$

Where 'a' is the distance of the front entrance pupil of the

lens in front of (+) or behind (-) the focal plane.

As can be seen from the accompanying graph, the front entrance pupil of a 25-250mm Cooke Cine Varotal zoom lens (when set at infinity) is 9.65 in. (245mm) *in front* of the focal plane at the 25mm end and 5.3 in. (135mm) *behind* the focal plane at the 250mm end. (At close focussing distances at the long focal lengths it is even further behind.)

To take examples when focussing at 5 ft. distance with focal lengths of 25 and 250mm, and a circle of confusion of 1/1000 or 0.001 in. (0.025mm) at T/8 we must proceed as follows:

First we need to know the hyperfocal distances of these two focal lengths at that aperture and note them down for future reference viz:

$$H = \frac{f^2(\text{mm}) \times 0.000129}{\text{circle of confusion (in.)} \times \text{stop}}$$

Working this out, we find that for all practical purposes the hyperfocal distance at 25mm is 10 ft. and at 250mm is 1000 ft.

Working out the depth of field by the simple formula, we would have found the 25mm to be in acceptable focus from 3 ft. 4 in. to 10 ft., a depth of field of 6 ft. 8 in., and the 250mm to be from 4.975 ft. to 5.025 ft., a depth of field of 1/2 inch.

From this we can also deduce that there is so little depth of field at the 250mm end that for most applications it is pointless to work it out. The 25mm one is worth having right, however, and to do this we need to use the expanded formula.

Looking at the graph we see the value for 'a' at 25mm focal length is + 0.8 ft. and before we make our calculations it is advantageous to add and subtract 'a' values to and from the hyperfocal distances (H) and note them down for future reference, viz:

$$H - a = 10 - 0.8 = 9.2 \text{ ft.}, H + a = 10 + 0.8 = 10.8 \text{ ft.}$$

We can then calculate as follows:

Nearest distance in acceptable focus:

Key Sequence	Example	Display
Enter H - a (worked out in advance)	9.2	9.2
Touch +	+	9.2
Enter focussed distance	5	5
*Touch ÷	÷	14.2
Touch = (to find reciprocal)	=	0.0704225
Touch x	x	0.0704225
Enter H + a (worked out in advance)	10.8	10.8
Touch x	x	0.760563
Enter focussed distance	5	5
Touch =	=	3.802815

Nearest distance in acceptable focus = 3 ft. 9-5/8 in.

Farthest distance in acceptable focus:

Key Sequence	Example	Display
Enter H + a (worked out in advance)	10.8	10.8
Touch -	-	10.8
Enter focussed distance	5	5
*Touch ÷	÷	5.8
Touch =	=	0.1724137
Touch x	x	0.1724137
Enter H - a (worked out in advance)	9.2	9.2
Touch x	x	1.586202
Enter focussed distance	5	5
Touch =	=	7.93103

Farthest distance in acceptable focus = 7 ft. 11½ in.

Depth of field = 4 ft. 1½ in.

Which, of course, is significantly different from the 3 ft. 4 in. to 10 ft. and at a depth of field of 6 ft., 8 in. If the variation between the front entrance pupil and focal plane was not taken into consideration.

*\*Not all calculators find a reciprocal by pressing the ÷ key followed by the =. Some have a 1/x key, others have no means, in which case the result of the below the line calculation must be put in the memory until the calculations above the line are done and then divide the result by the number in the memory. (When using a memory the memory clear key must sometimes be pressed twice to make sure it is clear of a previous calculation).*

*\*\*With some calculators it may be necessary to enter the lens focal length a second time in order to square it.*



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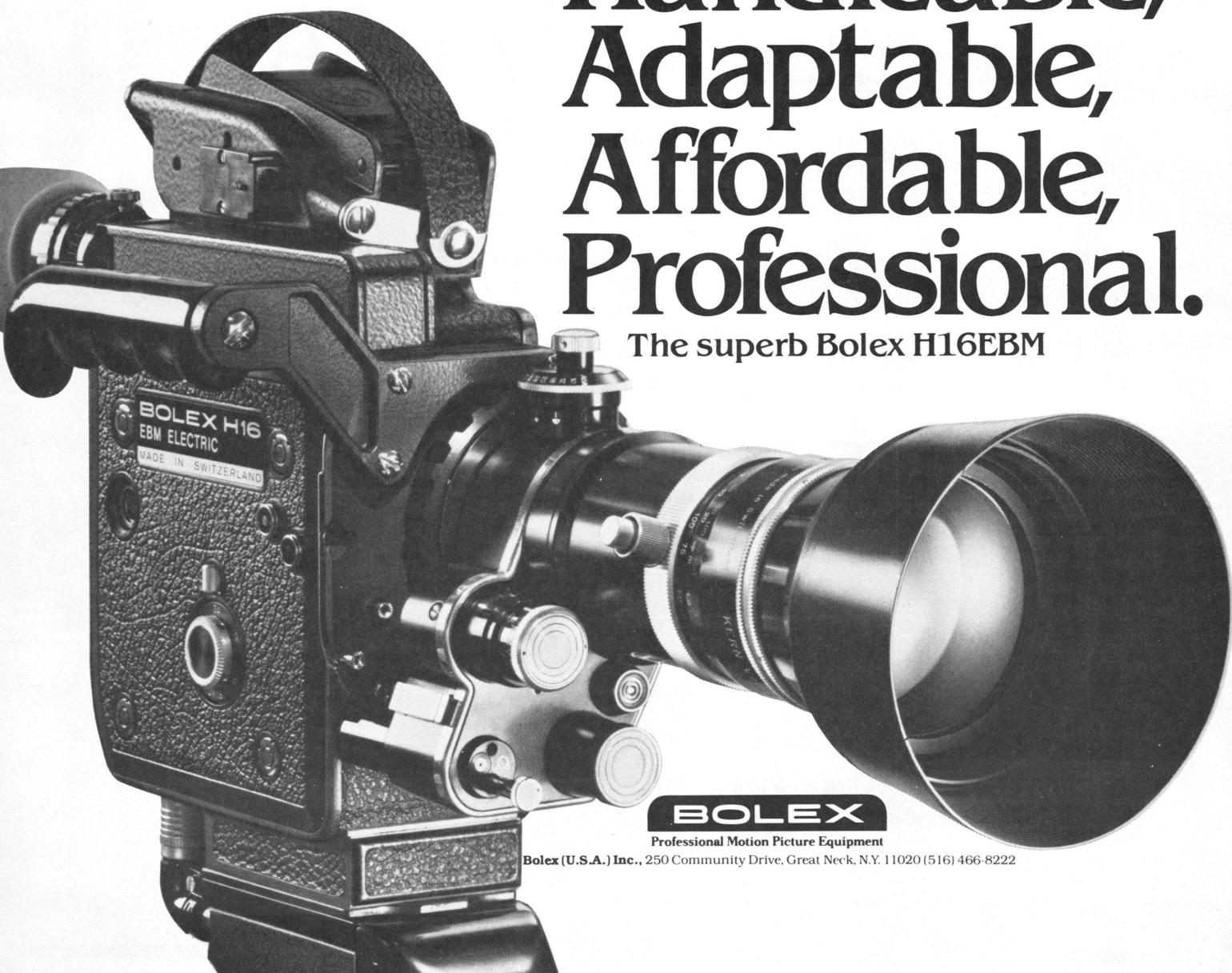
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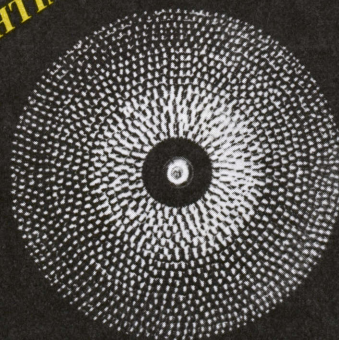


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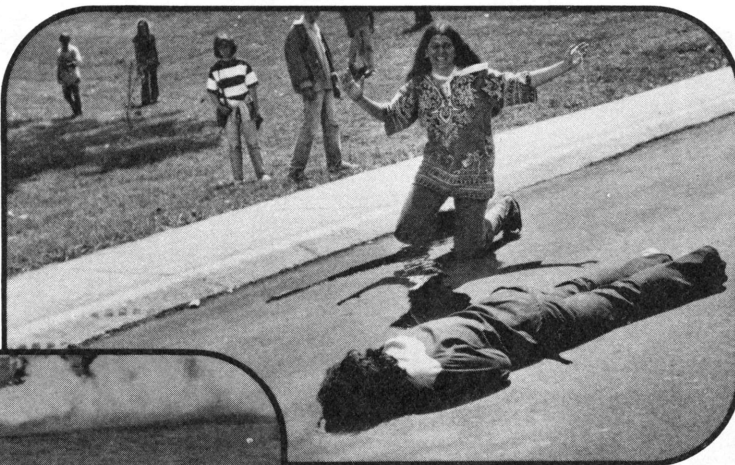
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## THE HOLLYWOOD IMAGE RE-CREATING "KENT STATE"

**P**erfection hinges on perfection. That's why when INTER-PLANETARY PRODUCTIONS and OSMOND COMMUNICATIONS set out to make a four-hour movie for NBC, re-staging on an epic scale the tragedy at 'KENT STATE', they had to have nothing but the best in cast, crew and equipment. That included James Goldstone, director; Steven Lerner, Director of Photography; and OTTO NEMENZ INTERNATIONAL, Arriflex. This production is also unique in that all of the post-production is being performed on videotape. Over 177 hours of material will be edited down to four hours.



Director  
James Goldstone  
(Winning, Red Sky at Morning, Swashbuckler, Roller coaster) talks about the production:

"The decision to go to video directly off negative for editing purposes had to do with a combination of budget and time. We are going straight to 2 inch on-line. I would be editing this picture for a year if I would do it on film."

The entire production was shot on 16mm and utilized, at times, as few as four and as many as six ARRIFLEX 16 SR cameras. OTTO NEMENZ INTERNATIONAL, known for their high standards of excellence, supplied the cameras.

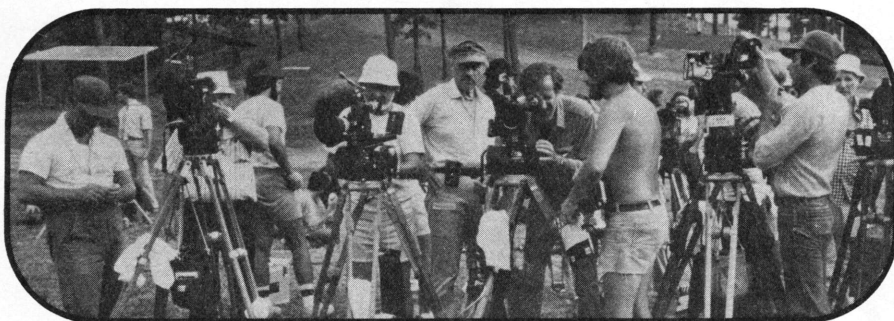
"The ARRIS were marvelous! In order to shoot a four-hour dramatic documentary,

which is going to be a feature for foreign, as well as a two-night special for NBC, I had to come up with a concept which is somewhere between documentary and traditional filmmaking. One sequence in the film, the climax, which is what happened on Monday, May 4, 1970 in Kent, Ohio, is the National Guard breaking up a peaceful rally. They go up a hill, over the top, down the other side, and up again, turning and shooting. I sent a thousand kids scattering as they would when 90 some odd Guardsmen moved in on them with their rifles and bayonets, etc. We scattered out with six cameras, covering the action from a 360 degree scope. Then, for tighter 'news-reel' coverage, I discussed with each operator the action of each individual event. The camera operators had to be flexible, moving from position to position, trying to catch a piece of specified action, then moving on to catch another. The ARRIS gave them the flexibility to capture the events that happened

on the way. Cameras were re-loaded once and sometimes twice during the course of one take. Another example, on a controlled scene between two actors sitting under a tree talking, one of the characters leaves and another makes an entrance. I, at this point, had only four cameras. I could have used more in order to maintain the documentary technique and get all my coverage without doing another set-up. In solving the problem, we set up two tripods so that one of the operators was able to take his camera to another position, shooting a close-up from a different angle, all in the middle of a dialogue take.

"If it hadn't been for the lightness, for the quickness, for the fact you can re-load in about three seconds, I could not have made the picture the way I did. The 16mm cameras worked better for our purposes than my favorite camera in the world, the Panaflex. The flexibility and speed with which we could work with the ARRIS not only facilitated our technique, but to a large degree made that technique possible. They gave us the aesthetic we were after."

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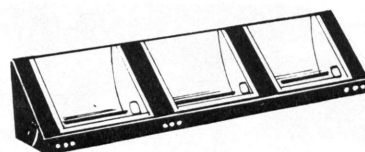
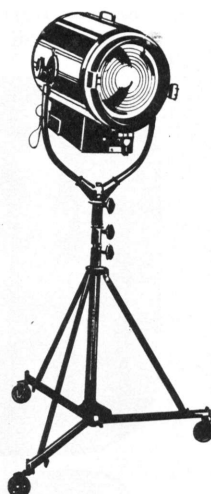
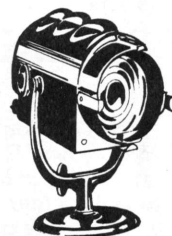
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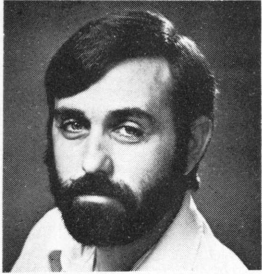
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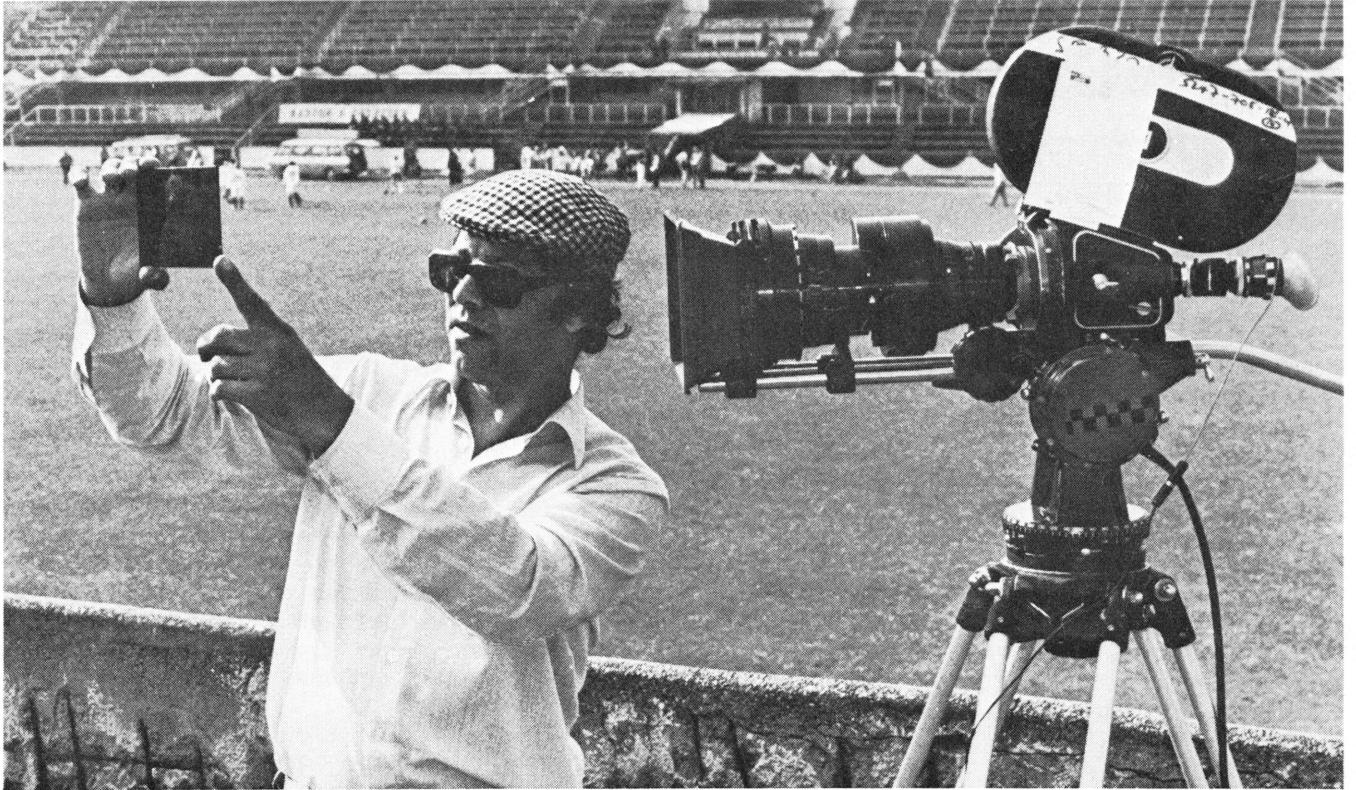


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any effect I want to achieve from reducing glare to correcting color balance.

"I've worked for British Movietone News for years as well as for documentary companies. And in the course of my career I have been involved with no fewer than 500 soccer matches, ranging from national events to Olympic Games coverage. I can truly say that Tiffen filters have helped me come up with winning footage."



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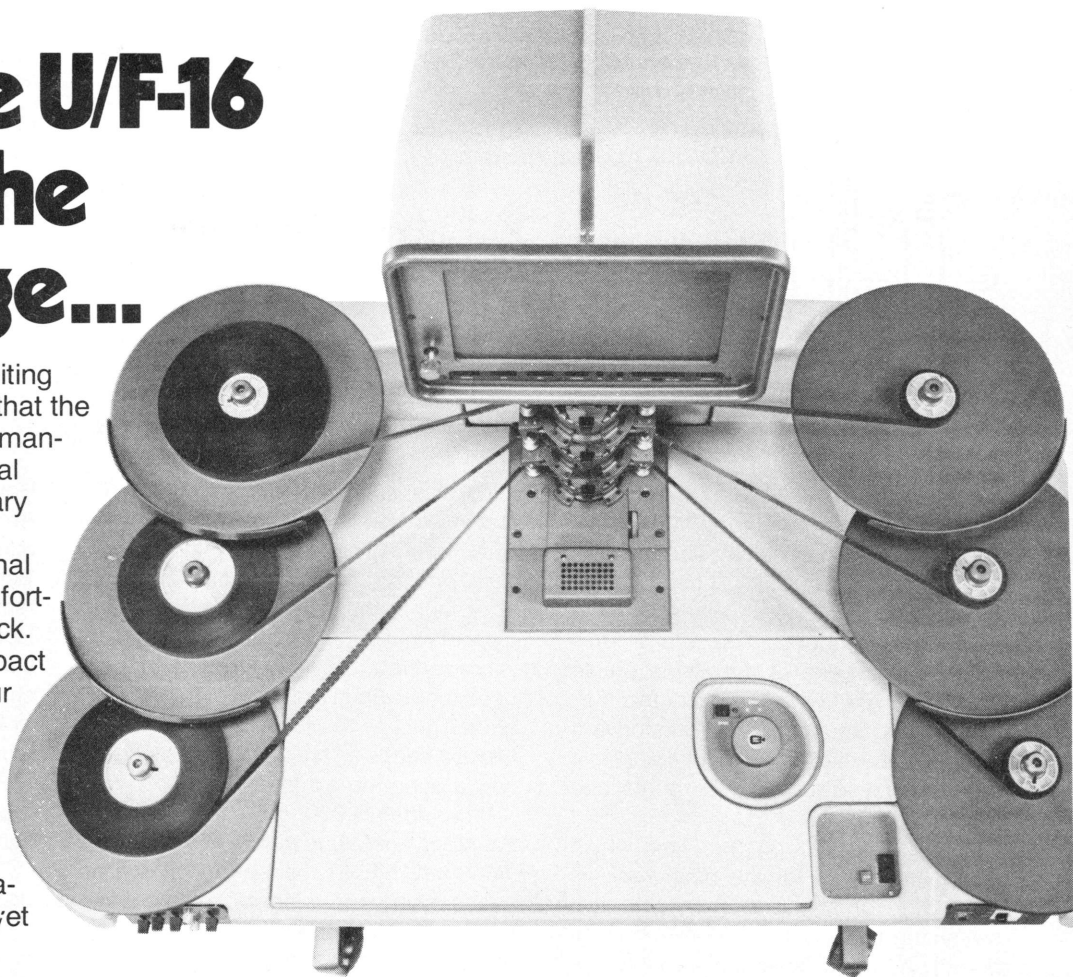
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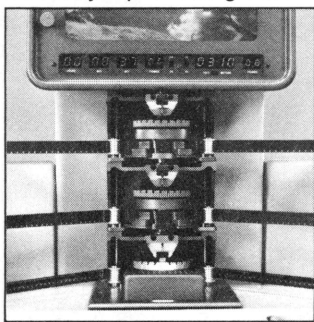
Best of all, our U/F-16 *combines* all the advantages of sophisticated flatbeds with the simplicity and reliability of upright editing machines — yet it is reasonably priced!

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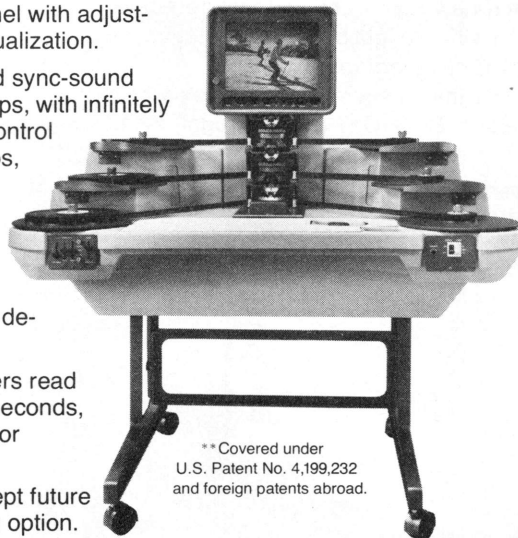


## Outstanding Features:

- Basic console design features six terraced horizontal feed and take-up plates accepting one 16mm picture track and two 16mm magnetic sound tracks. 1200 ft. capacity on all plates.
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\*\* Covered under  
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# EYE WITNESS REPORT FROM

# photokina 1980

By HERB A. LIGHTMAN

## COLOGNE, West Germany

After landing at the airport that serves this ancient Roman colony and bustling modern city on the Rhine, I head not for the stately Dom Hotel, where I have stayed during the past several *Photokinas*, but for one of the Rhine cruise ships which serve as floating hotels during this busy season. I'm looking forward to it, because ever since childhood I have always enjoyed sleeping on boats and trains.

As these vessels go, the *Fleur*, which will be my home for the next week, is something of a luxury liner, with two swimming pools (one outdoors, one indoors), a sauna, solarium, lavishly appointed bar and restaurant. However, I know that I shall not have time to enjoy these amenities because, for me, the biennial "World's Fair of Photography" is a morning-till-night preoccupation for the entire week that it runs. I am charged with seeking out, analyzing and reporting on each new item of motion picture equipment which might be of interest to *American Cinematographer* readers.

The immensity of the complex which houses *PHOTOKINA '80* boggles the

mind. It encompasses 14 gigantic halls (some of them two-story), packed wall-to-wall with still photography, motion picture photography and audio-visual equipment—the very latest. Fortunately, most of what our readers are interested in is concentrated in Hall 13 (which is being used for the first time), one of the newest and largest of the lot, but even so, one literally needs a "road map" to find one's way around the exhibits.

More than 1,000 exhibitors from 32 countries are taking part in *PHOTOKINA '80*—the 16th in the series—and this year's show occupies 120,000 square meters of space. It is the biggest of these events so far and I am hoping it will also be the best in terms of new equipment for motion picture production.

It has become something of a tradition for me to stop by the Arriflex stand first, not because it is among the largest, but because it seems to be a kind of central meeting place where I can be sure of encountering old friends from all over the world whom I usually get to see only every two years.

I'm not disappointed. There are several old friends there already—among them

Horst Bergmann, Marketing Manager for Arnold & Richter, and Volker Bahnmann, President of Arriflex Corporation. When the initial greetings have been extended and we get down to talking shop, Horst Bergmann says, "Here, on our stand, you see the results of a generation change. The company is now dedicated to four product divisions: motion picture cameras, film processing equipment, editing tables and film handling equipment, and motion picture and television lighting equipment."

This diversity is evident in the products displayed on the stand—and so is the "generation change". What this refers to is the fact that a vital young second generation of management has taken over at Arnold & Richter and it seems to have supercharged the organization.

"One of the areas where we foresee changes yet to come is in motion picture production for television," says Volker Bahnmann. "We believe that it is only a matter of time until there is a trend, even in America, to shoot those shows which are not intended for international theatrical distribution, but only for television, in 16mm original. There is no reason not to, once you reassess state-of-the-art 16mm technology, including ultra-speed lenses, the new sharp zoom lenses, the excellent Eastman 7247 color negative stock, and the flying spot scanners available for transfer to broadcast-quality tape. All of the logical and known advantages of 35mm are not necessary. This shift to 16mm will happen very soon, and I feel we are ready with our equipment."

Quite a statement from an executive whose equipment also includes two new models of 35mm cameras: the Arriflex 35 III and the Arriflex 35 BL III.

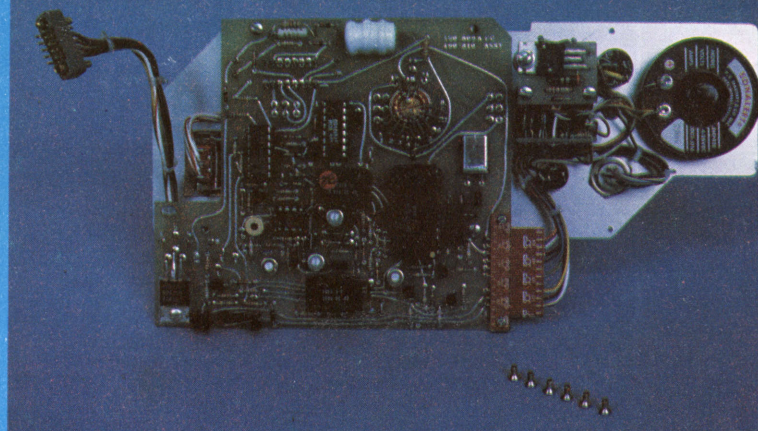
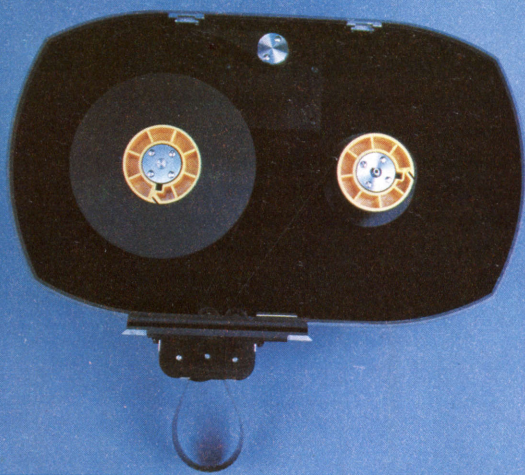
Over at the Cinema Products stand that statement might give them pause also, because they are showing the first prototypes of their elegant new CP35 camera. It is a clean, sleek design with an operating simplicity that belies its electronic sophistication.

On the Continental Camera Systems stand there is yet another new 35mm camera, the Feathercam CM-35. As the

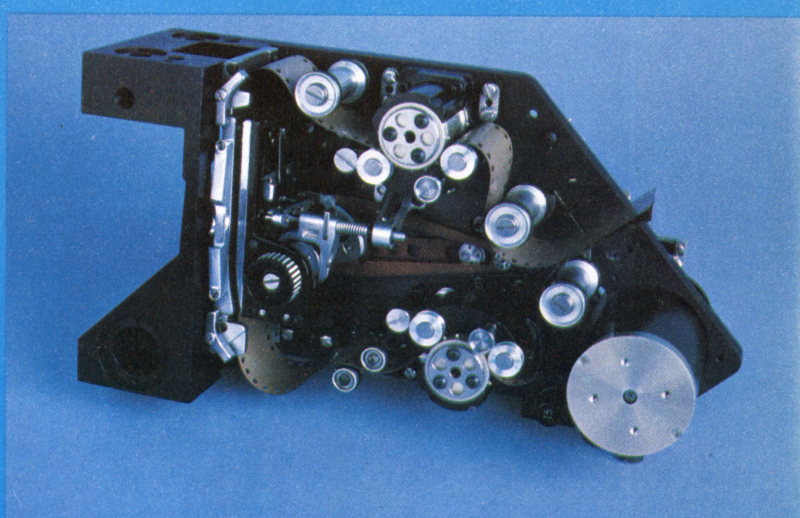
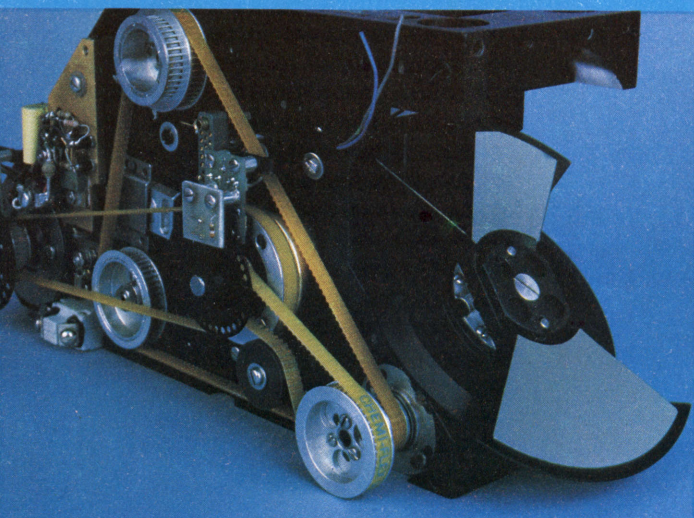
Every two years, *PHOTOKINA*, the "World's Fair of Photography" is held in Cologne, West Germany, filling 14 vast halls of a huge exhibition complex on the banks of the Rhine River. The famed Cologne Cathedral, the twin towers of which can be seen in these photographs, has long since become a familiar symbol of *PHOTOKINA*.







(LEFT) The CP-35 500-foot quick acting displacement magazine loaded with film. A 1000-foot capacity magazine is also available. (RIGHT) Rear view of the electronics system. Extensive use has been made of larger-scale integrated circuitry, enabling all of the circuits necessary to operate the basic camera system to be incorporated on a single printed circuit card measuring approximately 11cm square. (BELOW LEFT) Removed mid-rib drive side, showing belts, motor, etc. (RIGHT) Removed mid-rib film side, showing sprockets and film threading path.



the CP35 have proven the camera to be rock steady at all speeds up to 100 fps.

The hard chrome-plated aperture plate is easily removable for cleaning. It comes with full-aperture opening as standard, with provision for insertion of hard mattes for other formats.

The camera employs a half-speed rotating reflex viewing mirror with a 180° focal plane shutter behind it. The mirror-shutter is designed to automatically stop in the viewing position.

The reflex viewfinding system is designed to incorporate every feature a professional cinematographer would require, arranged in the most convenient human-engineered manner possible. It utilizes an interchangeable ground glass with provisions for insertion of a viewing mask, as well as a frame of film for matte shots. The large, bright viewfinder image remains erect through 360° of eyepiece rotation. The erector prism is adjustable, so that the camera operator can arbitrarily establish image orientation to suit any filming requirement.

The reflex viewing system also features de-anamorphising optics for use with anamorphic lenses. It also includes two contrast viewing filters and has

provision for a video tape for auxiliary video viewing. An extender tube is also available for more convenient viewing when the camera is mounted on a tripod or dolly.

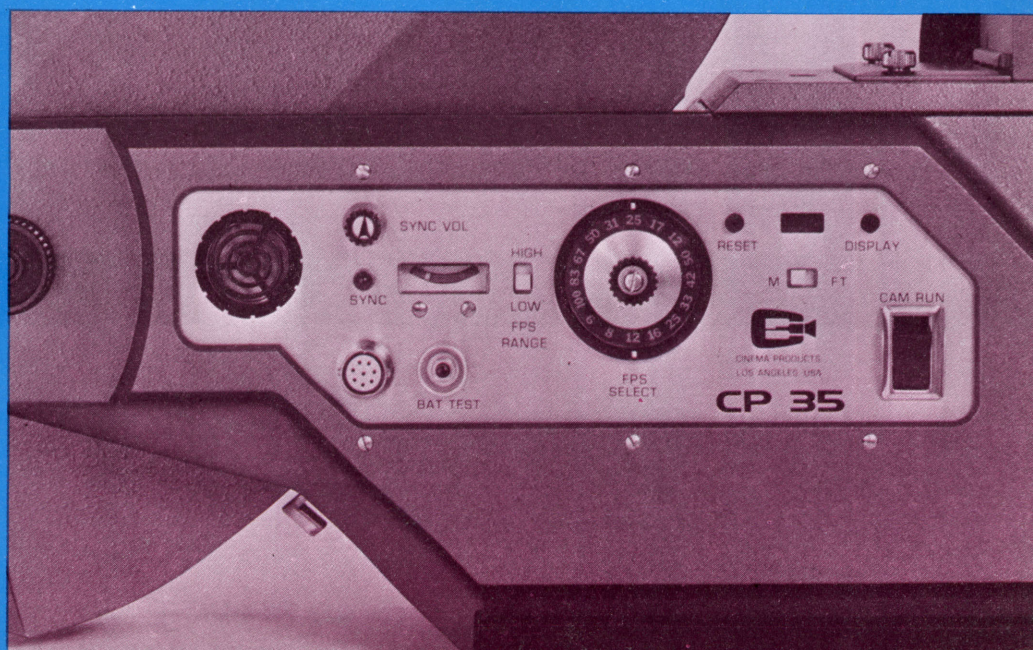
The lens mount follows the standard BNC lens mount arrangement with the anamorphic locating pin in the correct

critical position. Lenses may be mounted on either the full-aperture or the academy center line.

Jack Lacey, the principal electronic designer for the CP35, made extensive use of larger-scale integrated circuitry, enabling all of the circuits necessary to

**Continued on Page 1268**

**The control panel on the side of the camera, quite simplified, considering the sophistication of the instrument, includes frame-rate select and a meter for checking battery condition, among other functions. An optional feature will be a through-the-lens metering system—the first time such a feature will be available on a 35mm motion picture camera.**





# AATON CLEAR TIME RECORDING—A COMPLETE CHAIN



A print-out called "Scribe" adds the final link to an alpha-numeric time code system that can be read without using decoding equipment

(EDITOR'S NOTE: During the long struggle which has ensued within the motion picture industry to establish—and standardize—a Time Code method of synchronizing picture and sound, Aaton has always held the belief that the markings used in a Time Code system should be easily readable by eye without the necessity of relying on a decoder unit. With this in mind, Aaton, as far back as 1968, devised a means of exposing clear arabic figures between the perforations of film as it passed through the gate of a 16mm camera. This development led to the Clear Marking System which made its debut at FILM '77 in London. At PHOTOKINA 1980, the final link in this Time Code chain, known as SCRIBE, was introduced. The following material, provided by Aaton, traces the history of their Clear Marking Time Code System and explains how it operates.)

## A Brief History

Contrary to video, film owes its uniqueness to the fact that it is visible, comprehensible to the naked eye without the intermediary of decoding equipment: it is a "natural" medium. Film can be cut, intercut, recut, and edited by hand. This inherent transparency is at the root of film's universality, and of course of its non-obsolescence.

Because film is by definition transparent, it is logical then that any improve-

ment to the film system should retain the natural readability of the medium. So when it came to using time information to improve the method of filmmaking, Aaton chose what filmmakers understand most easily: clear letters and figures.

As far back as 1968, a system was devised by Aaton to expose clear arabic figures between the perforations of the film as it passed over the gate of a 16mm camera. The camera would be instructed by a master clock, so that each second a complete time address (year, month, day, hour, minute, second) would appear on the film edge. The same master clock would insert the start address into a standard Nagra III. Thenceforth every second of film and tape would contain a complete and incremented time address, and could be matched with absolute accuracy during editing.

The essential point of the Aaton system was simplicity of use for cameraman and editor. The choice of any coded system was out: too expensive to buy decoding equipment, modify editing tables, etc. An alpha-numeric system, however, was self-evident: the user had to be able to "read" with the naked eye

without depending on complex and expensive machines. But this was wishful thinking twelve years ago.

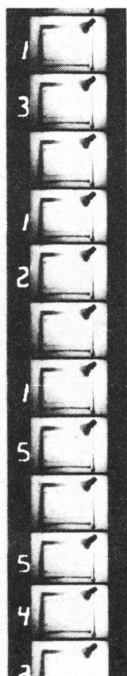
By 1977, microprocessor technology had advanced to such a point that Aaton was at last able to elaborate on the basic ideas set out in 1968 and start industrializing this revolutionary system at a price affordable to the user. The first Aaton Clear Time Recording equipment was presented in London at Film 77; based on extensive use of microprocessors, it was a first in the industry, outperforming the normalized non-computer code bar systems.

At about that period, the European Broadcasting Union ratified two competitive and partially incompatible forms of time code. Produced by various manufacturers, this time code system consisted in equipping cameras with a code bar generator, and 1/4" tape recorders with a code generator that interfered with the normal pilotone function.

Though a step in the right direction, this coded system has not been a tremendous success among filmmakers, because it does away with their basic necessities, such as truly compatible pilotone, and imposes elaborate decod-

The three major elements in the Aaton Clear Marking System. (RIGHT) Clear arabic figures are exposed between the perforations in the camera. (CENTER) Letters and figures are printed on the backing of 16mm perforated tape for sound synchronization. (RIGHT) Scribe is the heart of the Aaton Clear Time Recording System. At the end of each day it retrieves from the various cameras and sound recorders the data contained in their respective Event Memories.

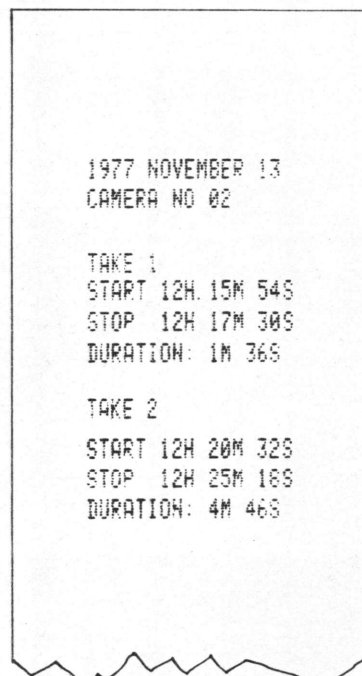
the date was November 13, 1977, time 12:15 54 and after.



**Camera**  
**Time on film**



**Recorder**  
**Time on tape**



**Scribe**  
**Time on paper**



ing equipment, eliminating immediate human access by the film editor.

The success of time code has been mainly with the major European TV stations, Société Française de Production in France, and West Deutsche Rundfunk in Germany. A serious shortcoming of the coded system is its lack of the communicative potential which recent computer technology has accustomed us to (see Conversations over).

Now, in 1980, Aäton presents not only a complete line of Clear Time Recording equipment, but also a whole new concept in the industry: **Scribe System**. The system incorporates a considerable amount of new technology. On this page are described the two basic levels of **Clear Time Recording** at work: for freelance filmmakers, and for post-production houses. The third description is a glance at the future of CTR—a milestone in filmmaking.

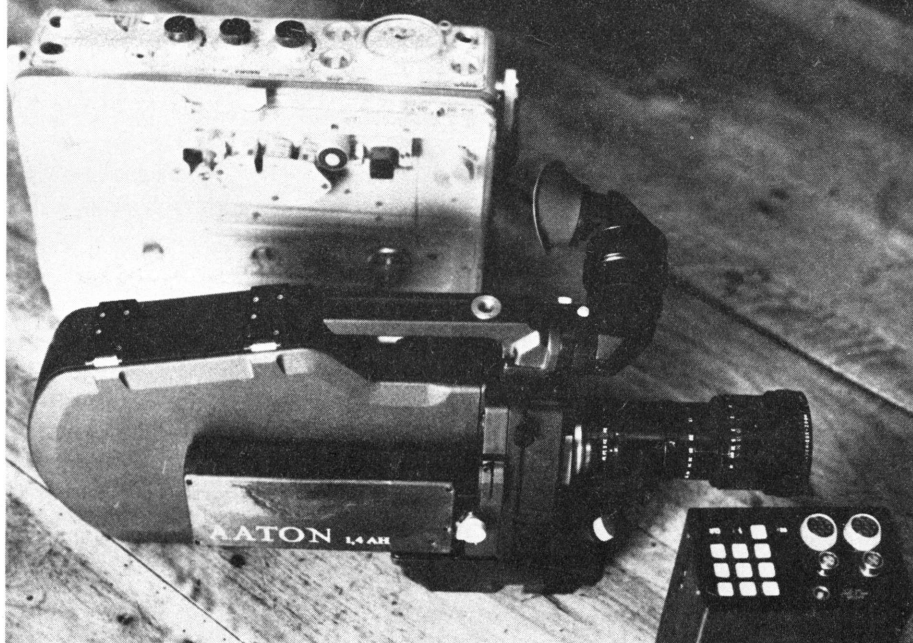
### For Freelance Filmmakers & Sound Recordists

Aäton's goal is to provide the filmmaker with information he can understand without having to learn a whole new language, so to speak (ever tried to decipher binary code bars?). Figures and words are a logical choice.

Another important consideration is compatibility with existing equipment, allowing the filmmaker to keep the cost of modifying what he already has as low as possible. Consistent with this philosophy of minimum expenditure, Aäton has made a point of developing a range of Time equipment from **low-cost modules** on up. The "bare minimum" of the Aäton Time equipment consists of the following:

#### Pilotime

**Pilotime is a pilotone compatible time generator for the Nagra or Stelavox.** The installation of this small circuit into the sound recorder is one of the first steps leading progressively to the introduction of the whole Clear Time Recording system. Each time the sound recorder is turned on, a three second burst of time information is laid down on the pilotone track. This 300/600 Hz burst in no way interferes with either the pilotone signal or the audio program, the first few seconds of which are never used in any case; the **1/4" tape remains completely compatible with normal use on a transfer bay**, and presents **no cross-talk** with the audio track. (When the audio track is played back, the transcoder—Trans H—Trans M—picks up the time information supplied by the burst and thereafter uses the normal pilotone signal as a clock frequency, incrementing the information each second.)



Nagra recorder and Aäton camera shown with the Initializing Master Clock (lower right). This microprocessor driven module is used to initialize film cameras, sound recorders and video cameras to any conventional time (including actual local time). It also provides the production number. These data are entered on its mini-calculator type keyboard.

### Option T2

Option T2 can be built into any Aäton 7 LTR camera. It **exposes clear figures right onto the film edge in the camera**. As Option T2 does not imply any modification to editing equipment, it can be introduced progressively without upsetting the film editors' habits or traditions.

With Option T2, Aäton supplies all the usual time information down to the second, **plus the production number**: the value of this is patent when it comes to cataloging or archiving.

### Origin C

Origin C is an **initializing master clock**, less complex (and much less expensive) than Origin K time-keeping master clock. The principal function of Origin C is to initialize the cameras and tape recorders on a take; after that, the Pilotime circuit in the tape recorder can re-emit its own time address to set other recorders or cameras. Why pay three times the price to maintain the time in the master clock, when any tape recorder once set by Origin C can do the job?

*With this basic equipment (audio Pilotime, film Option T2, and Origin C initializer, at a total cost of around 12,000 F) the freelance cameraman and sound recordist have between them the fundamental elements of Clear Time Recording. The cost effectiveness of this low initial investment is rapidly clear at the most primary level: with the disappearance of the slate, rawstock is saved; stress and fussing about with the clapstick are eliminated, and cameraman and sound recordist regain their lost autonomy and mobility vis-à-vis each other.*

### For Post-production People

By the time the film gets to the post production stage, the groundwork has been laid. Here, the advantages of the clear time address are notable: the **clear numbers exposed on the film edge every 20 cm are readable by the naked eye**, allowing each trim to be identified at a glance. The **editor's productivity is seriously improved**. Another economy inherent in Clear Time Recording is the elimination of rubber numbering. (With Aäton clear figures on the film edge, those who use Kodachrome, which has no latent edge numbering, have a wealth of information otherwise unavailable to them.)

The 1/4" audio tape that arrives at the post production establishment goes through various stages on its way to becoming clear time referenced 16mm tape for frame to frame matching with the film. With the Aäton Clear Time Recording system, each of these stages is facilitated, making the time information accessible to the user.

### Transcoder

**Trans H**, the basic transcoder, is a **small unit at a price affordable to any transfer facility**. The principle it functions on is elementary: as Trans H reads the 1/4" tape, it sets its internal timer to the time burst, and afterwards counts the seconds by incrementing the standard pilotone signal. The transcoder translates these two elements of time information into **low frequency SMPTE plus words** (hereafter called F & W) every second, and instructs the transfer bay to record this F & W signal right onto the perforated 16mm tape. In addition to the ASCII information just described, the

**Continued on Page 1288**



# IDI INTRODUCES HELICO CAMERA STABILIZING SYSTEMS



Two unique new vibration—dampening stabilizing systems for film and video cameras that can quickly be mounted for helicopter shooting

A new and exciting concept of filming and videotaping from helicopters, the IDI Helico camera stabilizing system, was unveiled at the 1980 *Photokina* by Image Devices of Miami and Atlanta. IDI arranged for a Bell Jet Ranger to land on the roof of the exhibit building to give a hands-on demonstration to interested parties at the international fair, one of whom was *American Cinematographer* editor Herb Lightman.

The IDI Helico helicopter mount was installed in the helicopter in a matter of minutes—quick set-up is one of its exceptional characteristics—and off flew Lightman and other cameramen around the city of Cologne. The dual spires of the famous 632-year-old cathedral made an interesting test target for telephoto lens stability.

German television representatives flew the helicopter. They said they were tremendously impressed.

"Impressive" is an accurate term for describing the IDI Helico camera stabilizing systems. Everyone involved in shooting film or video tape from a moving vehicle should be most interested in these two new products from Image Devices. The two vibration-dampening camera mounting systems unveiled by IDI at *Photokina* have been designated as IDI Helico I and IDI Helico II. Both mounting systems are capable of filling a very large

gap that currently exists in equipment available to facilitate the use of vehicle-mounted cameras. Both units are unique in their compact size, portability, affordability, dependability and versatility and both units are capable of being broken down and carried in a medium size suitcase. The IDI Helico systems operate on passive-mechanical princi-

ples and require no power supply or electrical connections.

## How It Works

The IDI Helico I is an overhead-suspension system of aircraft quality aluminum to support most film and video cameras weighing up to 35 kilos. The

**Continued on Page 1293**



(ABOVE) A Bell Jet Ranger helicopter with camera mounted on Image Devices' Helico I stabilizing mount soars over Cologne in a test flight conducted at *PHOTOKINA '80*. (LEFT) The Helico I is an overhead suspension system with a dampening assembly ball-joint connected to a slider sleeve that rides on silent bearings the length of a heavily-chromed steel bar. (BELOW) The steel bar can be seen suspended across the doorway of the helicopter in flight.





# THE NEW FEATHERCAM CM35 CAMERA



Derived from a P.O.V. helmet camera, this new four-claw pulldown, double-pin registration model is the lightest 35mm camera available

One of the pleasant surprises at *PHOTOKINA '80*, and something of a conversation piece, was the introduction by Continental Camera Systems of their new super-lightweight 35mm M.O.S. pin-registered camera, the Feathercam CM35.

What follows is the manufacturer's description of this equipment:

The new Feathercam CM35 is without doubt the lightest and smallest 35mm movie camera available. It weighs approximately 7 lbs. (camera magazine and viewfinder), yet it easily meets the most exacting requirements of the movie industry in every application.

Great attention has been given in the design of this new camera to dependability, reliability, ease of maintenance and simple fool-proof operation.

Although light in weight, this new camera is loaded with features not found on most of the cameras which are currently in service.

The film transport mechanism is a new but simple concept. It provides double fork, four claw pull-down and 2-pin registration. The result is dependable performance and absolute image stability at all operating speeds.

The film gate is much larger (6" long) than that normally found in other cameras. This provides for gentle but even pressure on a larger area of film and alleviates the possibility of film damage or emulsion deposits. No threading is needed either, as this is automatically achieved when the magazine is fitted.

The shutter is a dynamically balanced rotating reflex mirror set at an angle of 45 degrees to the light entering the lens. The shutter is also designed to stop in the viewfinder open position, so no adjustments are required.

Full screen (silent) aperture is provided.

The snap-on 500' co-axial magazine can be changed on the camera in less than two seconds. The magazine is simplicity itself to load, since it incorporates a unique loop-forming threading system which ensures correct loading every time. When loaded there is no loop of loose film to catch or snag and no threading is required on the camera. Just snap-on the loaded magazine and shoot.

A bright reflex viewfinder provides the operator with a brilliant image. It can be

set for right or left-eye viewing in seconds and is never obscured by the shutter.

The lens mount can be changed in a matter of minutes by the simple removal of four screws. Mounts are available for BNCR, Arri-Mount, Arri Bayonet and many others. This makes Feathercam compatible with most lenses currently available.

The motor provides variable speed performance frames per second. At over the range of 4-48, whatever setting is used, the motor is electronically controlled to maintain speed regardless of film loading or temperature extremes. In addition, two switch-selected quartz crystal locked speeds of 24 FPS and 25 FPS are provided. An instant 'soft start' facility assures gentle film handling no matter what frame rate is selected.

The camera features two bright, three-digit LED read-outs mounted on the top of the camera and easily visible to the operator or his assistant. One read-

out indicates film speed in frames per second and the other footage shot. The latter incorporates a built-in memory to show how film has been used, even when the camera is unplugged.

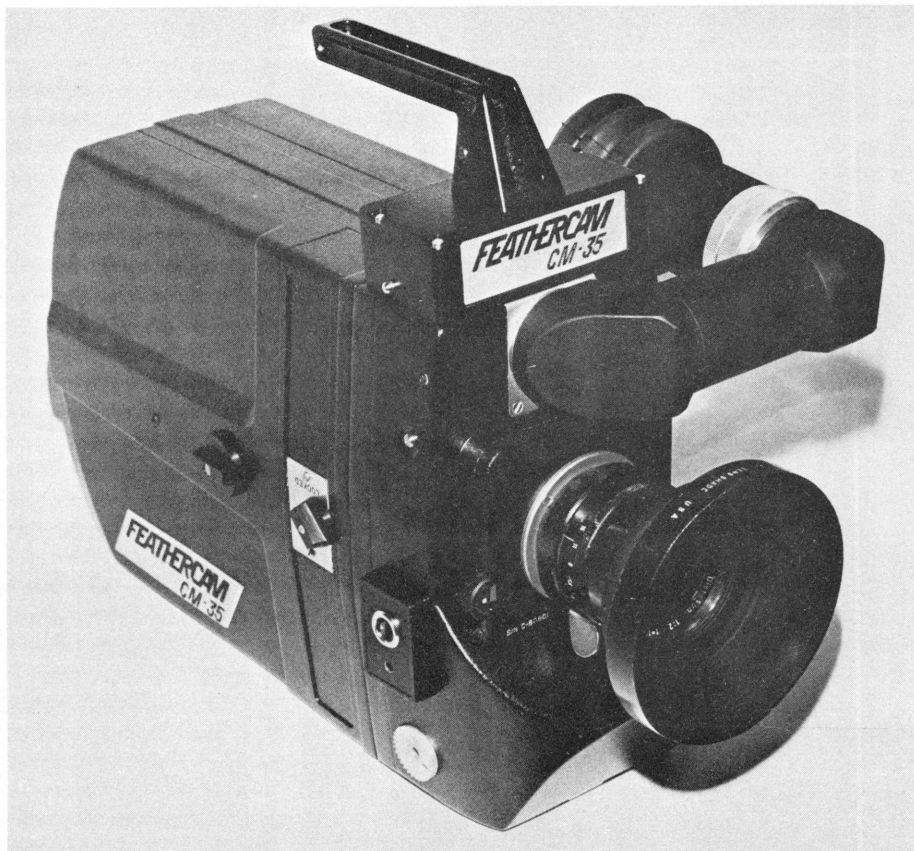
The camera operates from a 24v D.C. supply and two LED's—one red and one green—are fitted between the 3-digit readouts to indicate the condition of the supply. The supply is derived from a power supply unit or from variously configured rechargeable battery packs which are designed to suit the application.

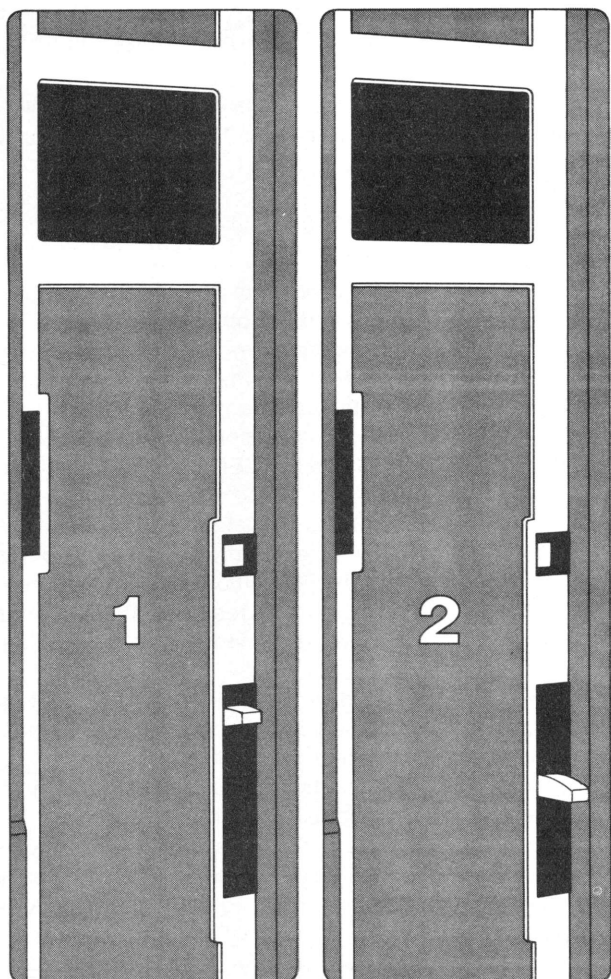
A video monitoring attachment is available which is compatible with most monitors or tape recorders in use.

The camera is equipped with two carrying handles. One which fits on top of the camera and one hand-grip which incorporates an on-off switch. Both are easily removed for studio mounting or tripods etc.

**Continued on Page 1283**

**The Feathercam is based upon the helmet camera designed and built in 1977 by Al Beck and his son Albert of Cinemechanics for Hollywood stuntman Fred Waugh. The new camera weighs a scant 9 pounds with 500-foot magazine and viewfinder. As small and lightweight as it is, it embodies many of the sophisticated features required in present-day filmmaking.**





#### Continuous film control: five stages.

1. Shutter has just closed. Registration-pin has begun retracting, claw has engaged the film.

2. Claw is halfway through its pulldown. Registration-pin is fully retracted.

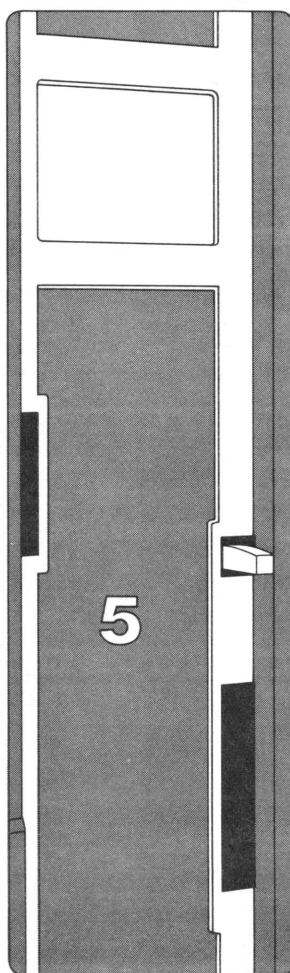
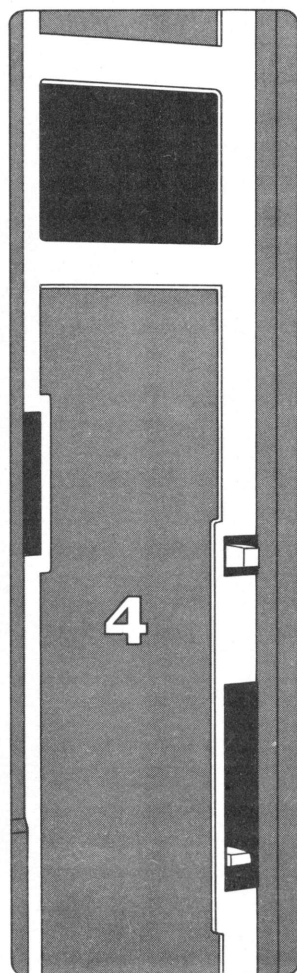
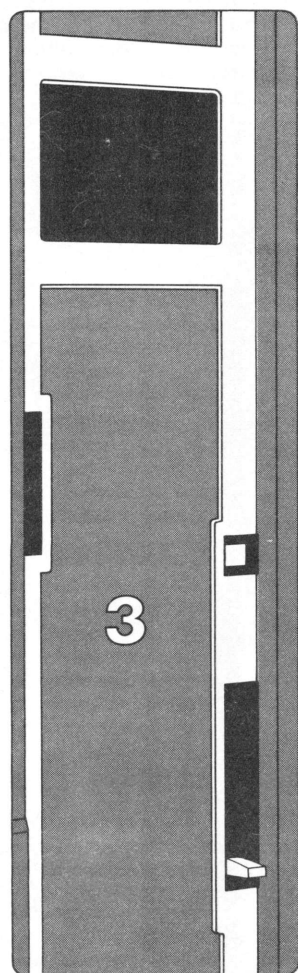
3. As claw nears end of pulldown, registration-pin begins to emerge again.

4. Claw begins retraction. Registration-pin protrudes to move the film to its final exposure position and hold it there.

5. No movement. Claw is fully retracted. Registration-pin is fully out and motionless. Shutter has now opened for exposure.

## The 16SR registration pin:

What seems to be an unsharp lens is sometimes a slightly unsteady image.



**A**t 24 fps, a 30 minute film contains 43,200 photographs. Each of them should be exposed on film that isn't moving. In frames that are positioned *just so*, one after the other.

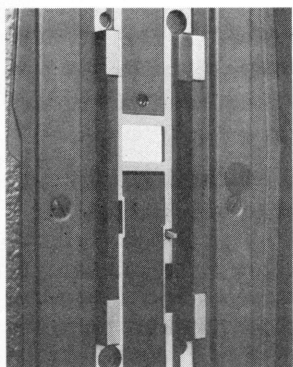
**A registration-pin movement costs more to build and is harder to make silent. Why do we insist on one?**

Of the moving parts in a 16SR movement, 40% have to do with the registration-pin. Clearly, we *must* think it important. And ARRI has been making cameras since 1917, so we've had time to think about it.

Between exposures, the claw must move the film a relatively large distance, fast. During exposure, the claw must hasten back up to do it again. The 16SR registration-



# Technology of the 16SR/One of a Series:



**Interaction tolerance: 0.0004 inch.**

pin positions the film, slowly, and holds it there during the exposure, motionless.

These are distinct functions. In the 16SR, therefore, claw and pin have independent control mechanisms. (Nevertheless, their interaction tolerance is 0.0004 inch.) The pin is shaped like an optical printer sprocket. And since it *moves* the film to its final exposure position, the relationship of the image to the sprocket-hole is *identical every time*.

## **The heart of the matter: Control at every step.**

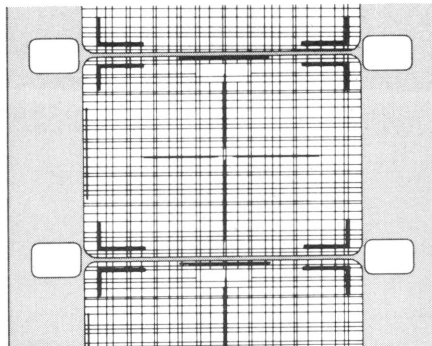
Either the claw or the pin is engaged in a film perforation *at all times*. At every stage of the pulldown, positioning and exposure cycle, the film is under positive control.



## **How sharp is that lens? It can depend on the camera.**

Before image unsteadiness gets bad enough to be perceived as such, it can appear to be lack of sharpness. A registration-pin movement costs more money. So does a first-quality lens. They go together. It would be illogical to save money by matching an expensive lens with a pinless camera.

ceived as such, it can appear to be lack of sharpness. A registration-pin movement costs more money. So does a first-quality lens. They go together. It would be illogical to save money by matching an expensive lens with a pinless camera.

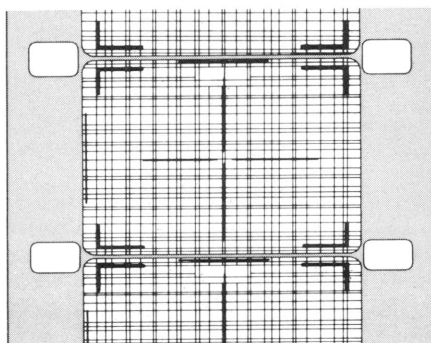


## **Double exposure steadiness test:**

Each new 16SR is tested by running a length of film through it. As part of the test, we shoot a grid-pattern target. After the first exposure, we offset the target slightly, wind the film back and re-shoot (see illustration above).

## **When you buy a 16SR, you get the test film for that camera.**

We project each camera's test footage. If film registration weren't perfect, the superimposed second grid image would be seen to move on the screen in relation to the first. *But it doesn't.* When you buy a 16SR, you get a small blue box containing that piece of test film.

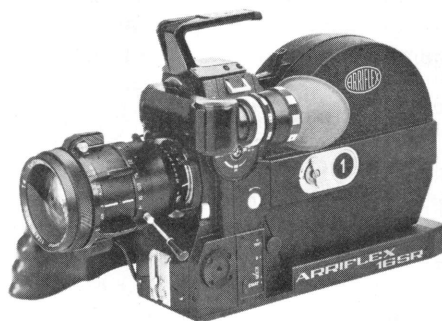


## **Is it *always* necessary?**

Movies have been made without a registration-pin, of course. But the pin can improve image quality from good to excellent. And it provides assurance that the camera will perform under adverse conditions and for a very long time.

## **No; just sometimes.**

If you have to shoot in tropical or freezing weather, or in high humidity. If you're under extra G force loads (in a car or plane). If the camera is getting on in years, or hasn't been overhauled lately. If you have to super titles, or shoot at high speed. If the rawstock isn't fresh out of the refrigerator. *That's* when the registration-pin earns its keep.



**16SR**  
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what you  
pay for.

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Canada: ARRI/NAGRA Inc., 6467 Northam,  
Mississauga, Ont. L4V 1J2. (416) 677-4033.

# NEW ITEMS FROM LOWEL-LIGHT AT PHOTOKINA



A new range of accessories by the world's foremost designer of lightweight lighting equipment to make filming easier and more convenient on location

Last year Lowel-Light Manufacturing Inc. of New York won a well-deserved Academy Scientific/Technical Award for its line of unique lighting and grip equipment designed primarily for location shooting.

Lowel has been inventing portable, efficient and durable location lighting systems since 1959. Extremely lightweight, compact and versatile, these systems were designed by a working cameraman, Ross Lowell, familiar with the realities of location work. They combine simplicity of transport with sophistication of mounting methods and light control.

The planning that goes into all Lowel equipment and kits results in extremely high watt-to-weight ratios and allows for a wide variety of lighting choices.

Introduced at previous *PHOTOKINAS* by Lowel have been such outstanding units as the Lowel Softlight, the Totalight and the Omni-Light. In 1978 the company presented four new lighting kits to meet a wide variety of needs.

At *PHOTOKINA '80* Lowel introduced several impressive items of accessory equipment which included the following:

## Lowel Grand Stand

The Lowel Grand Stand is a heavy duty, lightweight stand for large lights, reflectors, booms and devices to produce shadows or light control. Its extra wide base and large diameter tubing make it very stable where great heights or wind are involved. It was designed for both location and studio use.

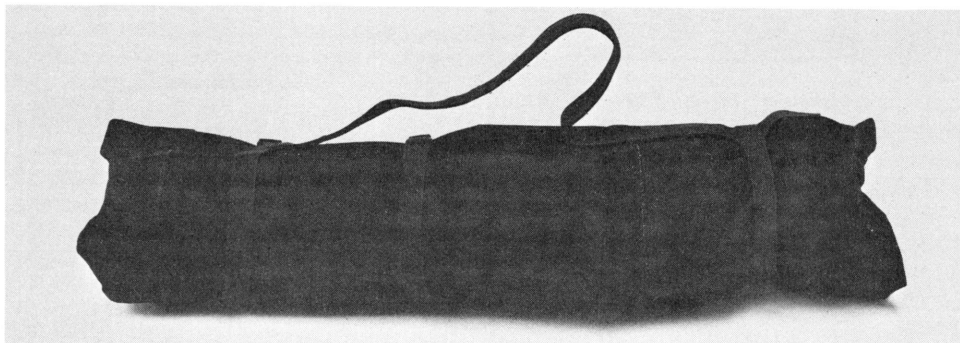
The Grand Stand has one adjustable leg for leveling on uneven ground or steps. Holes in the bottom of the legs accept accessory casters—especially useful for booms or studio use. The same

holes accept accessory Lowel Anchors. These are pushed into dirt or sand and greatly increase stability when reflectors are used. Three Lowel Anchors are equivalent to approximately 150 pounds (68 kilos) of sandbags, when used on typical lawn surfaces. Nails can secure

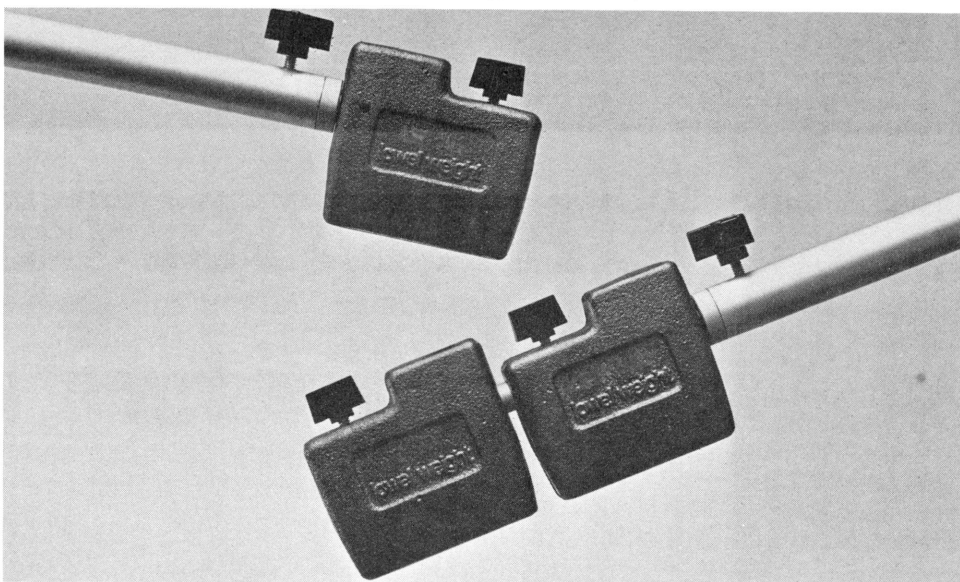
the legs to platforms for traveling shots, etc.

## Lowel Space-clamp

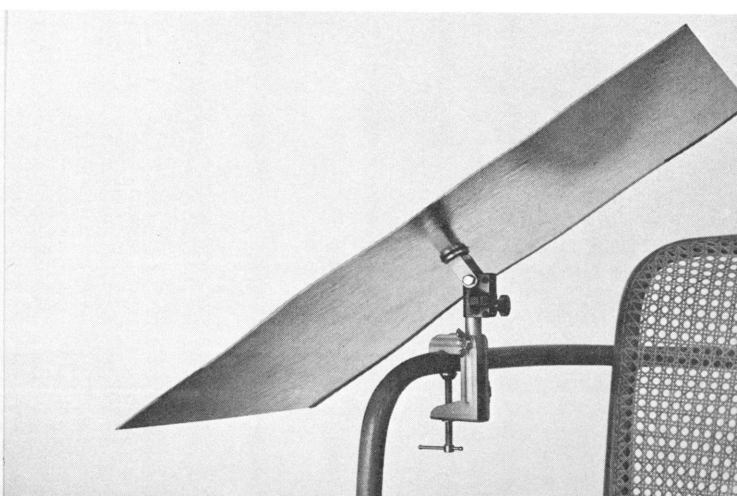
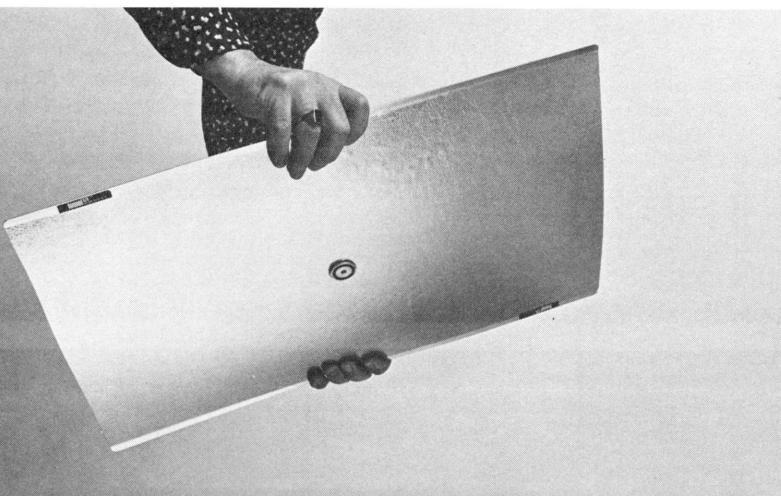
The Lowel Space Clamp is a new mounting device for attaching lightweight lights, lighting control devices, micro-



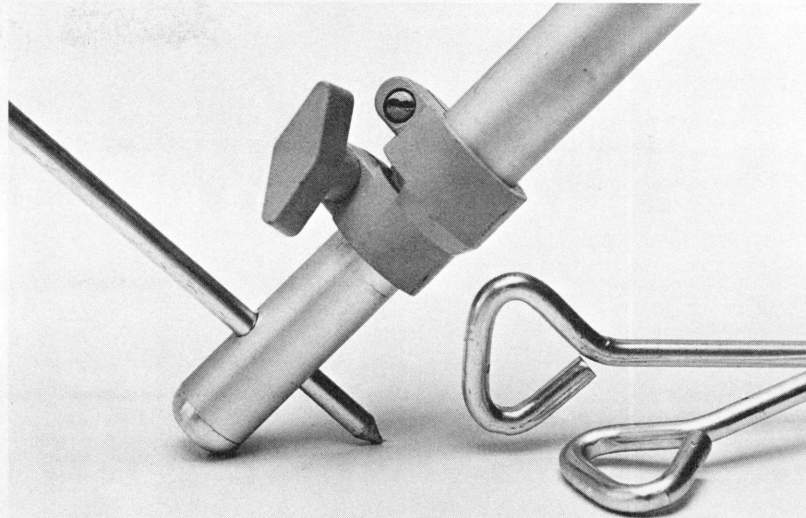
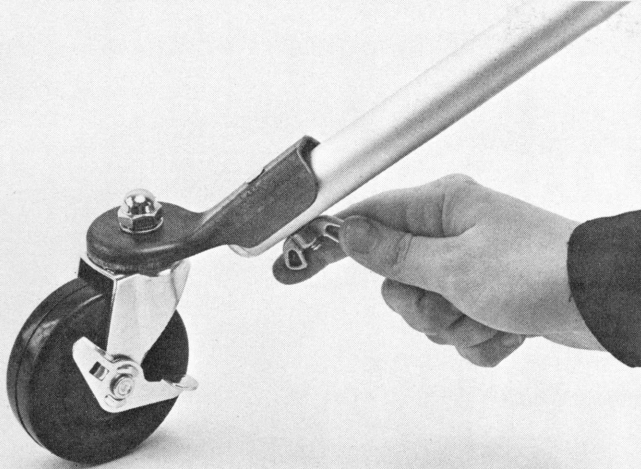
The new Lowel Roll-up Carrier is an efficient way of transporting a lot of equipment to location with minimum bulk and weight. (BELOW) Clamp-on Lowel-Weights, used to counterbalance Grand Stand boom arm or weight stand for greater stability.



(LEFT) The Lowel Lightflector, a medium small unit which reflects sun and artificial light. When hand-held, the Lightflector can be bowed convexly to reduce brightness and increase the area covered. (RIGHT) The Totatilter permits the Lightflector to be clamped to various pipes or other objects and tilted to reflect light where needed. When reflecting a light source already in use, the Lightflector provides additional illumination without additional amperage.







(LEFT) Holes drilled at the proper angle in the ends of the Grand Stand legs permit locking casters to be installed very easily. The stand can be converted into a boom rather quickly with the addition of a pole and grip on top. (RIGHT) The holes in the Grand Stand legs accept specially made spikes called Lowel Anchors that can be driven into hard surfaces or pushed into soft ground to provide a sturdy anchor for the Grand Stand.

phones and similar items to beams, posts, pipes, and partitions. Its capabilities go far beyond those of traditional "beam clamps" normally used for this purpose.

In addition to gripping objects in typical clamp fashion, the contact arms of the Space Clamp reverse to provide "jacking" action between two objects. The span of the Space Clamp, when used for conventional type gripping action, can be increased by adding extension bars which are available accessories for the Space Clamp. The mounting bracket for attaching fixtures to the Space Clamp has two standard 5/8" (16mm) diameter mounting studs, permitting both increased flexibility in the angle at which a fixture is attached to the clamp, and the capability of mounting two fixtures, simultaneously, on the same bracket. Several brackets can be used at the same time on a single Space Clamp and they can be installed or removed, without tools, whether or not the Space Clamp is in place.

### Lowel Lightflector

This medium small unit reflects sun and artificial light. It can fit in most Lowel kits, yet is large enough to provide fill light for two people, head to waist. It can be stand or clamp mounted with its Tota-tilter. A constant tension "clutch" provides reliable rotation. Tilting and panning adjustments are precise.

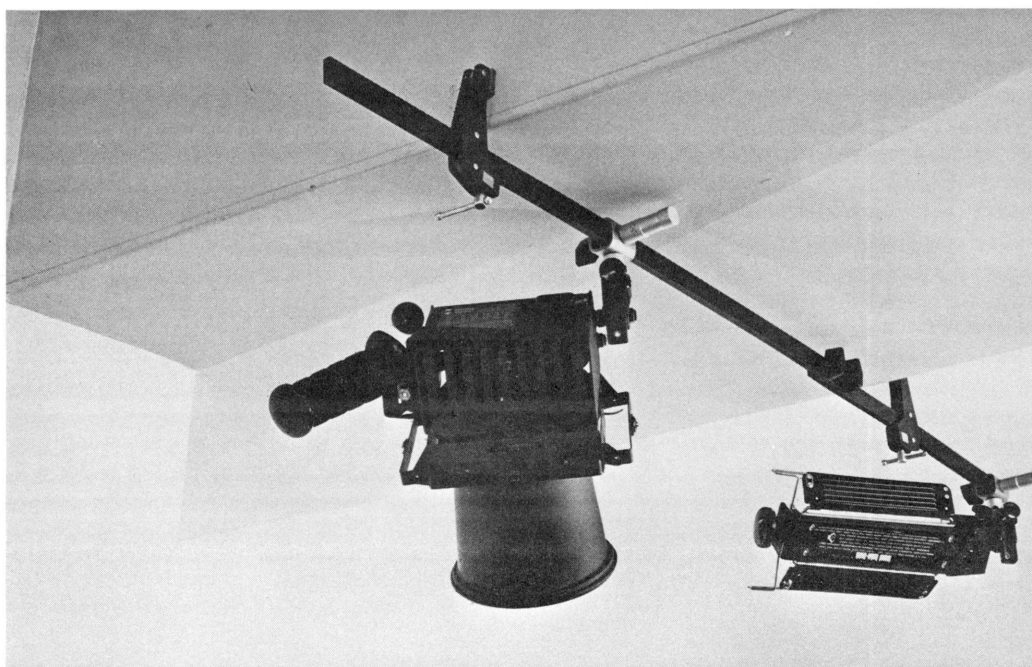
When hand-held, the Lightflector can be bowed convexly to reduce brightness and increase the area covered. Slight concave bowing intensifies the light at very close distances.

Both sides of the Lightflector are covered with washable, scratch resistant, aluminized Mylar. One side has "texture" to provide a soft, even light pattern. The opposite side is specular. Its extra

**Continued on Page 1291**



The Lowel Grand Stand is a heavy-duty, lightweight stand for large lights, reflectors, booms and devices to produce shadows or light control. (BELOW) The Lowel Space-clamp is a new mounting device for attaching lightweight lights, lighting control devices, microphones and similar items to posts, pipes and partitions.





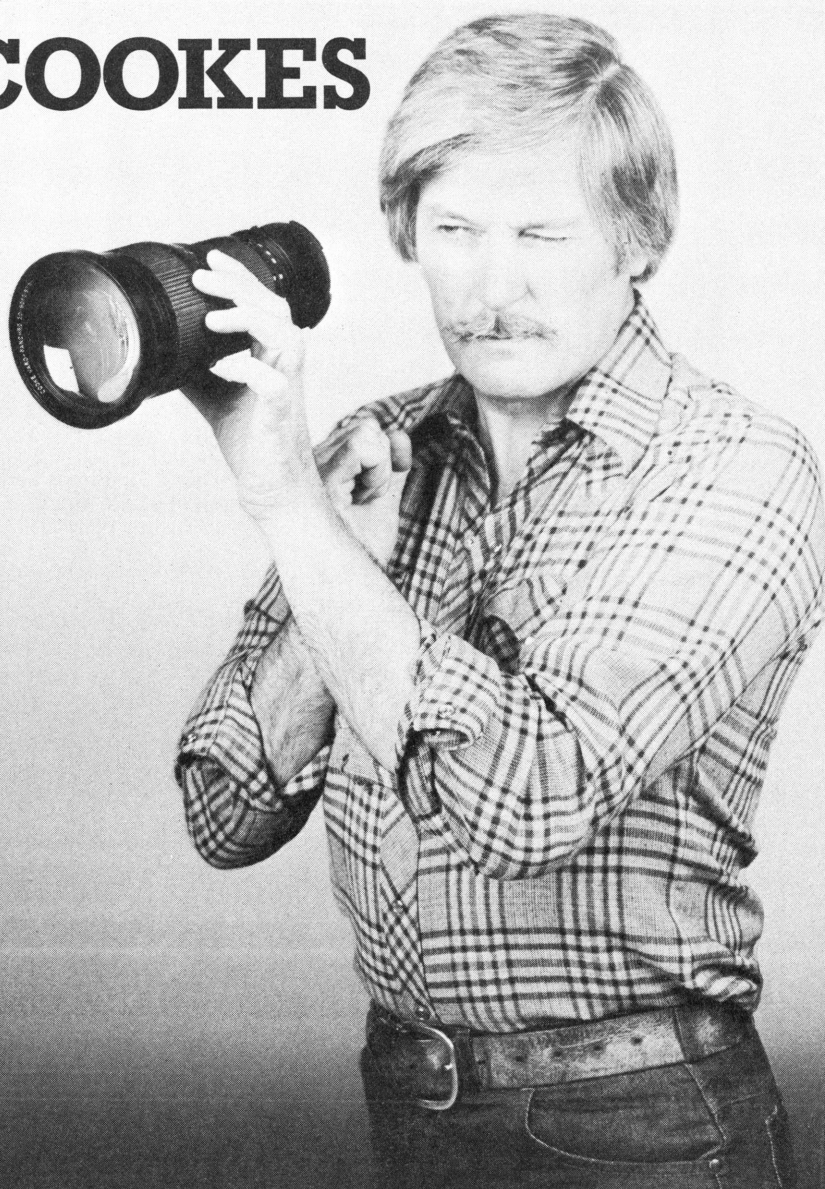
# TWO NEW COOKES



## Cooke Varo Kinetal Super 16.

**World's first lens designed specifically for Super 16mm.**

35mm quality for Super 16. Reduces production costs without impairing resolution and all round image quality. Widest angle an amazing 60°. Focuses as close as 0.23m from the front of the lens.



## Cooke Varo Panchro.

**World's first zoom lens for 35mm hand held shots.**

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# THE LATEST FROM STEENBECK



An exciting collection of sophisticated new editing consoles and newly modified models to advance the state of the film editing art

At *PHOTOKINA '80*, W. Steenbeck & Co. (GmbH & Co.) of Hamburg displayed a representative selection of their wide range of film equipment, including brand new items and update modifications of previously introduced equipment. The items consisted of viewing/controlling and editing machines for 16mm and 35mm films and equipment for magnetic film recording and playback of 16mm tapes.

## ST 1601

Editing machine for 16mm picture and 1 x 16mm magnetic sound tape. This device is equipped with a b/w video camera. The video picture is conveyed to the camera via a light divider, simultaneously giving the possibility of projecting also on the standard picture screen. For checking purposes the picture can be shown on one or more monitors.

## ST 1901

Editing machine for 16mm picture and 2 x 16mm magnetic sound tapes. This is presented as a basic unit for video sound editing. In this version the device is interlocked with a "Sony-U-Matic" in connection with a decoder for time code and a "Sondor" synchronizer. By this synchronous sound, editing in parallel to a video tape is possible. In addition the ST

1901 is equipped with a "Bosch" color TV camera TCX30. This serves for monitoring and also as a video transfer unit for editing purposes.

## ST 901

The proven 16mm editing machine for 16mm picture and 2 x 16mm magnetic sound tapes was shown with an EBU/IRT time code device. The decoder ST 60 has a microprocessor allowing a compact and simple lay-out, thus offering many possibilities for checking and controlling.

## ST 921

The 2-picture editing machine for 16mm picture and 2 x 16mm magnetic sound tape is equipped with a cut marking automatic feature for marking and stopping for cuts on both picture films. Furthermore, it is equipped for stereo reproductions.

## ST 701 (C)

35mm editing machine for 35mm picture and 2 x 17,5/35mm magnetic sound tapes. This device is now adapted to the successful new 18-face polygon system and is electronically speed controlled. It permits a brilliant, flicker-free reproduction of standard and, if desired, of anamorphic films.

## ST 721 (C)

2-picture editing machine for 35mm standard and anamorphic film and 2 x 17,5/35mm magnetic sound tapes. This new construction is adapted to the new system as above and equipped with cut marking automatic.

## ST 6001 (C)

New design of the popular combination editing machine for 16mm and 35mm picture in connection with 2 magnetic sound tapes 16 and 17,5/35mm. It is equipped with two integrated picture systems, one for 16 and one for 35mm films. Therefore, it is no longer necessary to exchange decks. 18-face polygons are incorporated in both picture system. The 35mm unit can also be adapted to anamorphic films.

## ST 1

Device for recording and playback of 16mm magnetic sound tapes of studio quality. It offers universal possibilities of application and is especially suitable for all sound recording studios. All functions are controlled by a microprocessor. Special applications are:

Recording in a sync studio for speech recordings in connection with a synchronously interlocked projecting device (e.g., editing machine). For this purpose

(LEFT) ST 701 (C)—A 35mm editing machine for 35mm picture and 2 x 17.5/35mm magnetic sound tapes. This device is now adapted to the successful new 18-face polygon system and is electronically speed controlled. (RIGHT) ST 6001 (C)—New design of the popular combination editing machine for 16mm and 35mm picture, in connection with two magnetic sound tapes, 16mm and 17.5/35mm. It is equipped with two integrated picture systems—one for 16mm and the other for 35mm films.





it is equipped with a loop programming facility.

Transferring of 1/4" sound tapes with pilot tone recording and EBU/IRT time code.

Exchangeable magnetic head carriers are available for one and multi track heads for all track arrangements in use.

The device is laid out for the usual interlock and synchronous frequencies. The selectable sync sound speed, 24 or 25 fps, is crystal or mains frequency controlled.

Besides the large variety of accessories, many novelties are introduced to facilitate the work of professionals

such as:

Film counter with a computing micro-processor to convert all measuring data for length and time of any format faultlessly by pressing the appropriate button.

In connection with the editing machine this counter can be equipped with a search control for automatic stop and loop programming. Any data may be entered via a keyboard for computing and control purposes. All values and data are limitless stored.

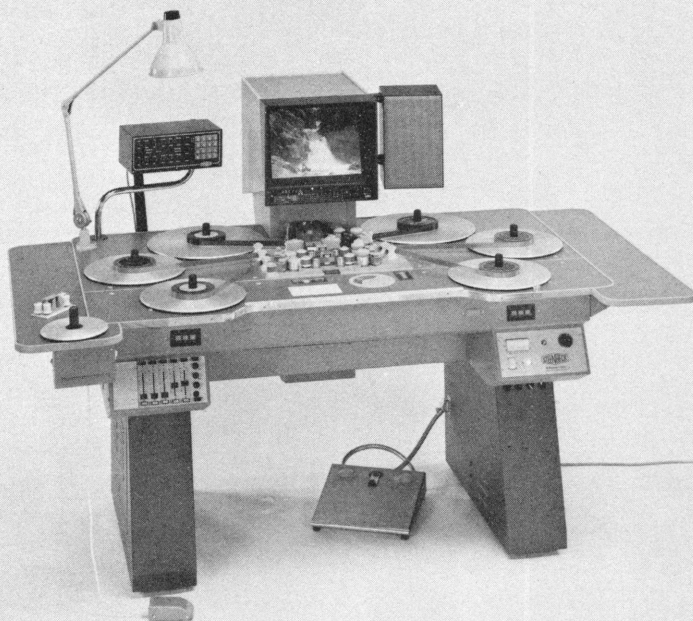
The advance/retard counters feature an additional single frame mode. For time-saving, large ends of film may be displaced and single frame can be

exactly counted by means of a toggle switch.

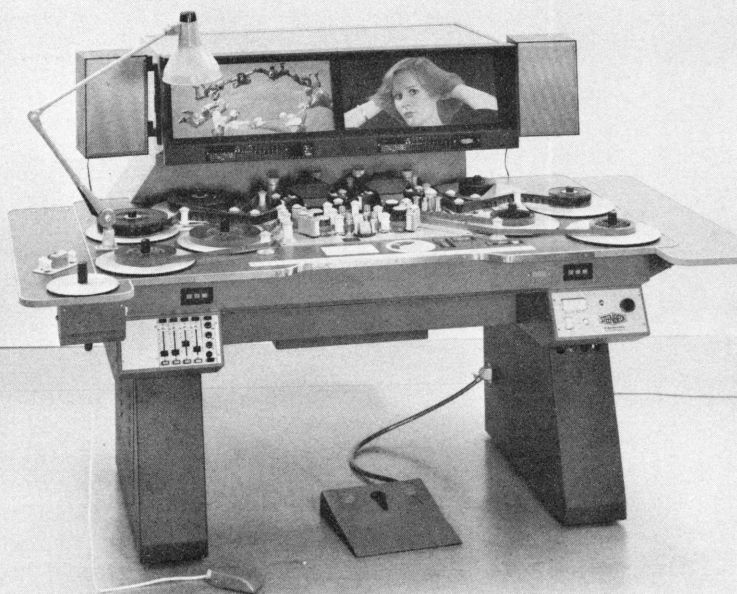
The modular-type amplifiers based on integrated circuits can be selected to groups according to requirements. For all channels there are group attenuators for volume, treble and bass.

A dynamic compressor can be switched on additionally to raise low sound effects without having the amplifier boost to full output at loud sound effects.

In addition a speech speed processor is presented. This makes possible the understanding of speech even at multiple sync sound speed. ■



(LEFT) ST 901 with ST 60—Editing machine for 16mm picture and 2 x 16mm magnetic sound tapes. The ST 60 decoder has a micro-processor. (RIGHT) ST 1401 Editing console. (BELOW LEFT) ST 921—Two-picture editing machine for 16mm picture and 2 x 16mm magnetic sound tapes. It is equipped with a cut-marking automatic feature. (RIGHT) ST 721 (C)—Two-picture editing machine for 35mm standard and anamorphic and 2 x 17.5/35mm magnetic sound tapes\*



# The Arriflex 16SR High Speed: It's quiet.

At 24 fps, it measures 32dB. Same features, same accessories, same on-board battery as the standard 16SR. Switched on, it gets up to 150 fps in under two seconds. Even at *that* speed, it measures only 56dB.



John Nicholas directed the official film on the Lake Placid Olympics. "Some locations the crews had to ski to," he says. "At others, officials put everybody in one spot. Or the terrain restricted

angles. Yet we needed something different from the TV coverage. Our 16HSRs gave us the equivalent of two cameras at each position: high speed *and* sync sound. They did double duty."

**T**hree feet from the film plane, the 16SR High Speed (the 16HSR) measures 32dBA at 24 frames per second. That's quiet enough to shoot sync sound on location, in most cases.

At the same distance, the 16HSR measures 56dBA at 150 frames per second. That's quiet enough to shoot a tennis serve without getting thrown off the court, or a golf swing without being clubbed by the player.

Runup power is supplied to the motor in linear fashion, compensating for load. No jerks. You can start at 150 fps if you want to. And the 16HSR will run at exactly the speed you set, crystal-controlled. No need to watch the tachometer.

Whatever frame rate you choose, the 16HSR gets to it in under two seconds. The camera doesn't waste film running up. *You* don't waste film by switching on early to be at speed when the action happens.



With 10-100mm Zeiss lens, 400 foot magazine, on-board battery and variable speed control, as shown here, 16HSR weighs 16¾ lbs.



The 16HSR has same features, uses same accessories, is powered by same on-board battery as a standard 16SR.

You can change the 16HSR's coaxial magazine in about five seconds. And you can unload and reload it in less than four minutes. Except for the pressure plate, the magazine is the same as the one on the standard 16SR. (But they're not interchangeable.)

The variable-speed control unit mounts on the carrying handle. It's on a swivel base, so you can turn and tilt it in any direction. Wherever you put the viewfinder (left side, right side, front, back, up, down), you can see the switch positions and frame rate readout.

On the unit's front, there are two switches, a knob and an LED readout. The knob sets the speed. One switch turns the camera on and off. The other selects variable or sync speed. On the back are two more switches. One sets the LED counter to 24 or 25 fps. The other selects 16 or 35mm. (You can use this control unit with *any* ARRI crystal driven camera.) 10 to 150 fps on the 16HSR. And you can change from sync to variable speed *during the shot*.

This isn't a temperamental instrumentation camera. This is an Arriflex. Registra-

tion-pin movement. Mirror-shutter reflex viewing. Fiber optics screen. Versatile viewfinder. Standard built-in APEC meter. Various matte-boxes, bridgeplate, follow-focus, video adapter. On-board battery. ARRI mount lenses, including the Zeiss T1.3 primes. Arriflex service.

**ARRI**  
ARRIFLEX CORPORATION

500 Route 303, Blauvelt, New York 10913.  
(914) 353-1400. And 600 No. Victory Blvd.,  
Burbank, California 91502. (213) 841-7070.  
Canada: ARRI/NAGRA Inc., 6467 Northam,  
Mississauga, Ont. L4V 1J2. (416) 677-4033.

# THE VIDEOLA V-1000 FILM-TO-TAPE TRANSFER SYSTEM



Videola® . . . the video Moviola® . . . is a new and different system for transfer of 16mm or 35mm film to broadcast-quality videotape.

Use of the unique Flickerless Prism® optical system allows a smooth *continuous* film motion, and produces a video image consisting of picture frames being *dissolved* one into the next. The transfer is completely independent of television synchronization and scanning rate, so the film can be transported at any speed while the video image remains sharp and clear, with no sign of flicker, jitter or frame lines.

Picture resolution is extremely high. Imaging is by a high-grade video camera, using the Videola optics. The machine can be supplied with or without camera, so the user may employ an existing camera. In either case, the camera may be readily removed for other purposes.

A standard feature of Videola is the ability to run films with separate magnetic sound tracks, as well as composite prints. A second complete transport, with duplicate set of controls, allows mag tracks to be run in sync with the picture or independent of it. For either transport, sound quality is exceptional, with very low wow and flutter.

Operating controls are human-engineered for flexibility and operating convenience, and include settings for brightness and color correction.

Film is protected from damage through the use of recessed surfaces in all critical areas, and through the use of an exceptionally gentle transport mechanism. Tension-sensing arms control the action of the torque motors for smooth, even acceleration and braking of films up to 3,000 feet in length.

16mm and 35mm transports are interchangeable, so the same Videola may be used for both formats.

## Features:

- Prism optics; no frame line, no flicker, no jitter.
- No dedicated camera needed.
- Variable speed; still frame to 6x or 10x sound.
- 16mm, 35mm interchangeability.
- Resolution limited only by camera.
- Handles negative or positive film with TLC.

## SPECIFICATIONS

**Picture Transport:** Modular dual

A new concept in 16mm and 35mm film-to-tape transfer produces a video picture free of flicker, and with frames dissolving one into the next

sprocket servo drive system. Crystal-controlled or variable sound speed. Hollow "FLICKERLESS PRISM®" type optical projection. All surfaces in critical areas recessed to prevent film damage. Composite optical and magnetic sound pickup—16mm; optical sound pickup—35mm. Manual inching provided.

**Sound Transport:** Modular dual

sprocket servo tach drive system. Crystal-controlled or variable sound speed. Can be interlocked to picture transport or compatible external pulse source. One 16mm edge track or center track SMPTE or DIN equalization. (When ordering, specify EDGE or CENTER track and type of equalization.) Dampening arm system  
**Continued on Page 1284**



Making its debut at PHOTOKINA '80, the unique Videola V-1000 has interchangeable 16mm and 35mm film transports for film-to-tape transfer, while retaining the features of a Moviola film editor. (BELOW) The Videola V-2000 Deluxe model, previewed at SMPTE in New York, has added features, including built-in picture and waveform monitors, speaker, storage space, etc.

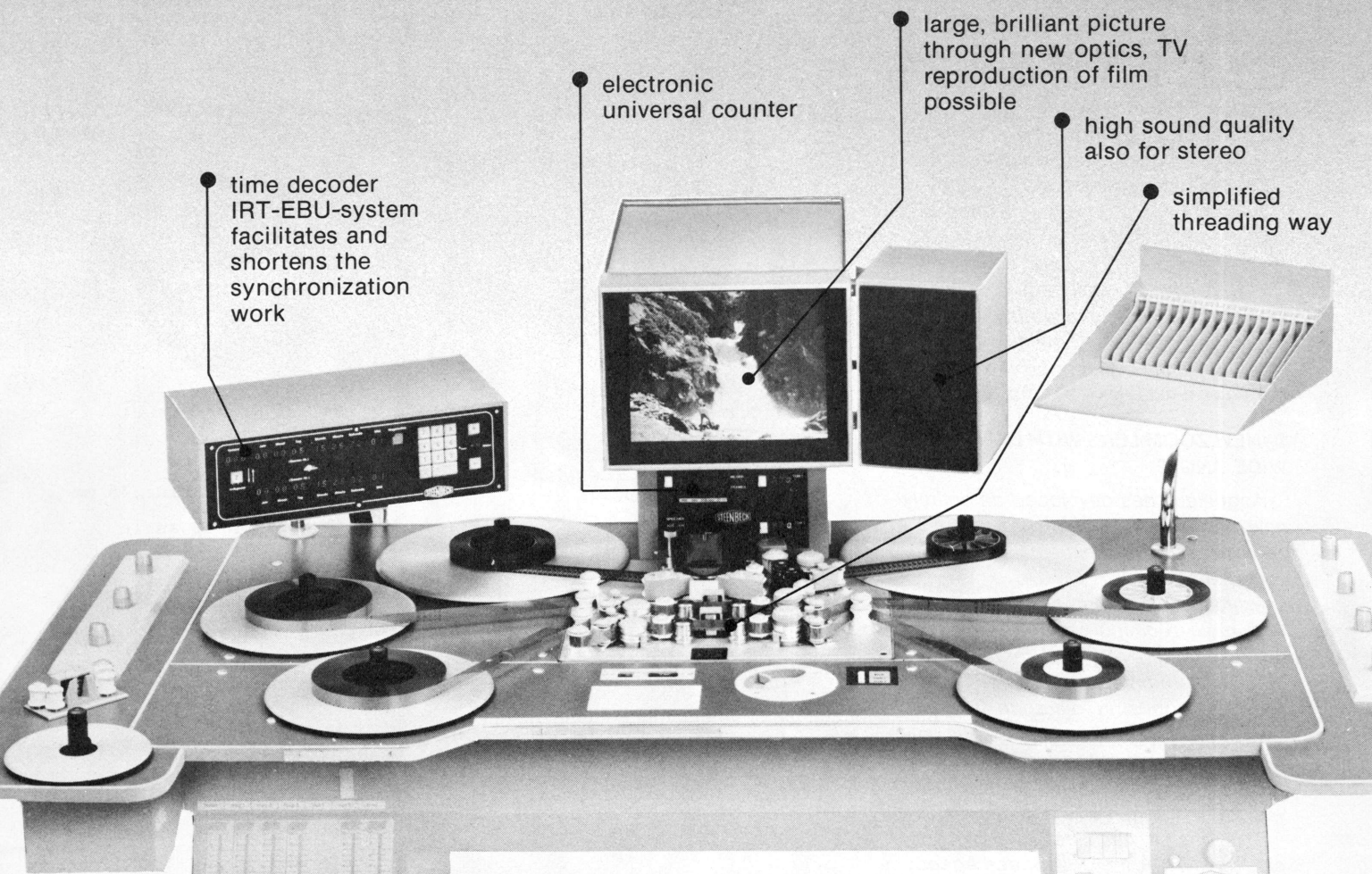




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# ANGENIEUX INTRODUCES NEW LENSES



Two outstanding new zoom lenses for 16mm production make their debut in Cologne with other products from a foremost manufacturer of cine optics

In addition to its other, more familiar, optical products on display at *PHOTOKINA '80*, ANGENIEUX introduced two entirely new zoom lenses for 16mm cinematography, both described in superlative terms. One is characterized as having "the widest horizontal angle (85°)", and the other as having "the ultimate optical quality".

In the following release, provided by ANGENIEUX, these two new lenses are more specifically described, along with other ANGENIEUX products displayed at *PHOTOKINA '80*:

*In line with our constant concern to allow professional film producers to benefit from the latest developments and techniques, Angenieux has recently produced zoom lenses for 16mm cinematography providing:*

- the longest zoom range (15x)
- the largest aperture (T/1.3)

Angenieux is proud to announce two completely new zoom lenses with:

- the widest horizontal angle (85°)
- the ultimate optical quality

In addition the availability of wide angle and tele attachments now provides for notable extended flexibility of the Angenieux 2.8 x, 10 x and 15 x zoom.

## 1-NEW ZOOM LENS WITH EXTREMELY WIDE ANGLE:

Angenieux has developed an entirely new optical formula which provides a 3 x zoom range with an extremely wide horizontal angle of 85°.

Professional 16mm film-makers will thus have zooming capability over the unprecedented range of focal lengths from 5.5 to 20mm at an aperture of T/3.2. Minimum focusing distance is 80cm from the film plane. The lens weighs only 1.5 kg and at full aperture the optical quality is similar to that obtained with the well known Angenieux 10 x 12 lens.

This design has already been specified by NASA, the USA Space Agency, for the cameras to be used on the US Space Shuttle during the forthcoming flights to the Space Lab.

## 2-NEW ZOOM LENS WITH THE UTMOST OPTICAL QUALITY:

The unanimously recognized quality of our Optics has led to Angenieux being in the undisputed position of world leader for 16mm motion picture zoom lenses. In line with this policy of leader-

*ship, and in response to the continuing technical progress in cameras, stocks and industries requirements, Angenieux has developed a new 12 x zoom lens of extremely high optical quality throughout the entire field and at all focal lengths, with optical quality limited only by diffraction.*

The Angenieux 12 x 9 has the following features:

- focal lengths range: 9–108mm
- aperture: T/2. constant throughout the entire zoom range

- minimum focusing distance: 1 meter (3 feet) from film plane
- weight: 1.5 kg
- optical quality: flat from center to the edge of the picture.  
at T/2 same as with Angenieux 10 x 12 at T/4  
at T/4 diffraction limited
- mechanical construction: high Angenieux reliability

Continued on Page 1292

The two new Angenieux zoom lenses shown here each represent the "ultimate" according to specific criteria. (TOP) This 5.5mm-20mm, T/3.2 zoom lens features the widest horizontal angle. (BOTTOM) This 9mm-108mm zoom lens features ultimate optical quality throughout the entire field and at all focal lengths, limited only by diffraction.



Angénieux zoom for cine 16 mm  
Widest horizontal angle  
F = 5,5 - 20 mm T 3.2



Angénieux zoom for cine 16 mm  
Ultimate optical quality  
F = 9 - 108 mm T 2





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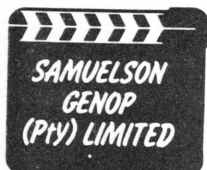
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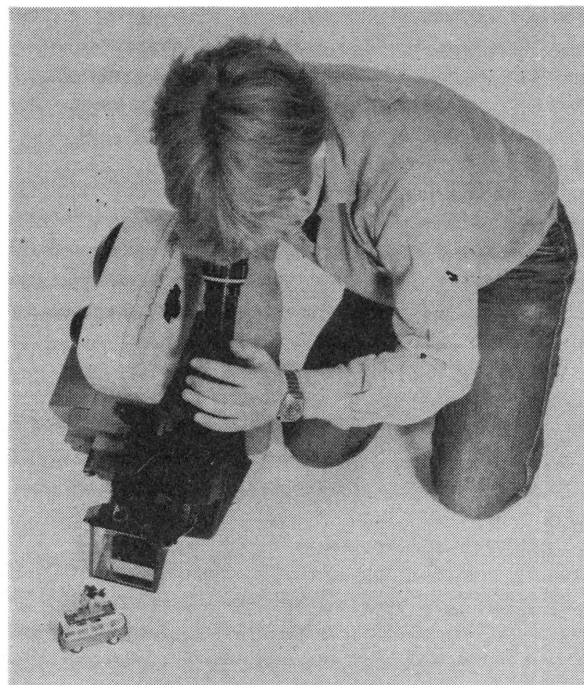
Genop House, 15 Hulbert Road  
New Centre, Johannesburg, S. Africa  
Tel: 836 4275, Telex: 43 0057  
Cables: Genop Johannesburg

# A Cameraman is never so low as when he is using a Samcine Inclining Prism!

The Samcine Inclining Prism is a 'front of the lens' optical accessory incorporating a specially computed Bauernfeind prism which makes possible very low (or very high) angle cinematography with a wide range of lenses without loss of aperture (speed), optical performance, or picture orientation.

When fitted to the front of a lens the optical axis is deviated through  $51^\circ$  and, because the light path is both reflected and refracted, i.e. is bent twice, the image emerges the right way up and the right way round, left to right.

By using a glass of high refractive index it is possible to make a compact unit which covers a 50 mm Anamorphic lens, a 24 mm non-Anamorphic lens for 35 mm Academy format, and a 12 mm lens for use with 16 mm cameras. Larger units have been made to use

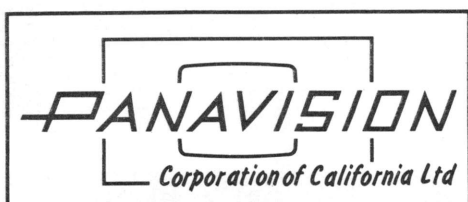
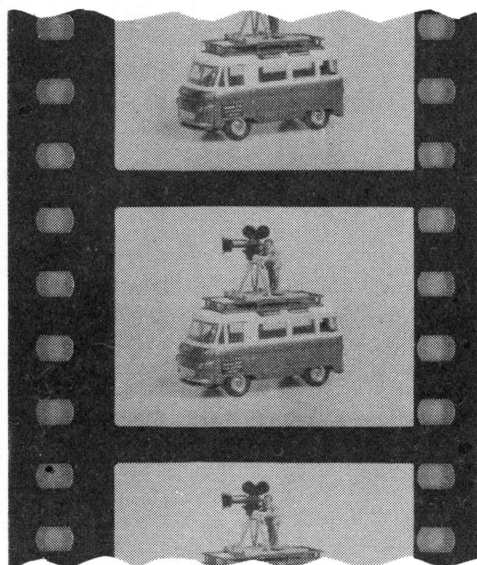


with Anamorphic lenses as wide as 30 mm and with various 35 mm zoom lenses including the 20-100 and 20-125 mm types.

Samcine Inclining Prisms are especially useful for filming miniatures.

Among the advantages of the Samcine Inclining Prism are that it is so small that it may be dipped into a position, that the bottom edge is pointed so that the entire unit may be tilted backwards to look up from a low angle without losing 'lowness' (in fact the optical axis is lowered), that the regular lenses being used on a production may not only continue to be used and will operate at their full aperture if required (T1.3 remains virtually T1.3) and so requires no additional light (and heat) to make up for transmission losses in the optical system, it is very quick to fit or remove, it may equally well be fitted 'upside down' to give increased camera height, and it is an inexpensive answer to the age-old requirement of cinematographers to get a camera viewpoint that is lower (or higher) than is possible with the regular equipment available.

(U.K., U.S. and other foreign patents pending).



# A.G.E. Inc. 1980

## 35mm CAMERAS

Sale Price

35 Arri BL w/2-400' Mags, 16, 24, 32, 50, 85mm Zeiss Lenses, Scales, Lens Blimp, Matte Box, Cable Battery & Cases	\$52,500.00
35 Arri IICBT w/2-400' Mags. Constant Speed Motor 28, 50, 85mm Lenses, Cable, Matte Box and Case	\$ 9,500.00
35 Arri IIB w/2-400' Mags. Constant Speed Motor 28, 40, 85 Lenses, Power Cable, Metal Matte Box and Case	\$ 3,995.00
35 Arri IIB w/1-400' Mag, 1-200' Mag, Var. Speed Motor 32, 40, 85 Lenses, Metal Matte Box, Power Cable and Case	\$ 3,895.00
35 Arri IIB w/1-400' Mag, 1-200' Mag, Var. Speed Motor 35, 50, 75 Lenses, Metal Matte Box, and Case	\$ 3,895.00
35 Arri IIB "Body" Only, Completely Rebuilt	\$ 1,995.00
35 Arri IICB 2-400' Constant Speed Motor 28, 50, 85 Lenses, Cable, Matte Box and Case	\$11,500.00
35 Arri IIC 2-400' Constant Speed Motor 28, 50, 85 Lenses, Cable, Matte Box and Case	\$10,500.00
Mitchell Mark II Pkg. Camera w/220V Sync. Motor 2 ea. 400', 20, 25, 32, 40, 50, 100mm Cine Prominar Lenses, Matte Box, Follow Focus w/Cams, Cable and Cases	\$17,950.00
Mitchell BNC Camera Pkg. w/220V Sync. Motor 4 ea. 1000' Mags 28, 40, 50, 75 Baltar Lenses, Finder Cable & Cases	\$19,500.00
Mitchell 35TA w/3 Speed Sync. Motor, 10" Lens 2-400' Mags. & Case, Like New	\$ 5,500.00
Mitchell Std w/110V Motor, 28, 40, 50, 75mm Cooke Lenses 1-400' Mag Finder, Cable & Cases	\$ 4,200.00
Mitchell NC Pellicle Reflex Body	\$ 6,500.00
Mitchell FC 70mm Body, Excellent	\$10,500.00
Mitchell FCD 70mm Body, Very Good	\$10,500.00
Bell & Howell 2709 Camera Body w/ Mitchell Type Rackover on "L" Base, Completely Rebuilt, Excellent	\$ 4,995.00
Bell & Howell 2709 Camera Body Rebuilt	\$ 3,995.00
Bell & Howell Eyemo "Q" Body Only	\$ 795.00
Traid "Photo-Aid" Sequence Camera w/ Motor 12-48 FPS	\$ 1,250.00

## SPECIAL CAMERA SYSTEMS

Eclair NPR/Film Studio System w/3-NPR Camera w/Optical Viewfinders and Video Camera Optically Coupled, Cameras Have 12 to 120 Angenieux Lenses and 400' Magazines. Control Console Has Switching, Individual Camera Monitors and Master Monitor, Complete w/Cables and Cases	\$35,000.00
Milliken DBM-64A Video Film Recorder System w/Camera, Phase Lock Drive Unit, Camera Control Unit, Maurer "F" Prime Galvo (Less Amplifier) 16mm x 1200' Film Magazine, Reconditioned	\$29,440.00

## 16mm CAMERAS

Arri 16BL w/12 to 120 90mm Macro Kilar. 2-400' Mags, 1-1200 Mag. Cable & Case, Excellent	\$10,500.00
Arri 16B1 w/12-5 to 75 Zeiss, Matte Box, 400' Mag Battery, Cable & Case. Very Good	\$ 8,495.00
Arri 16M, V.S. Motor, 12 to 120, Matte Box, 400' Mag. Battery Belt, Cable, Case, Excellent	\$ 8,500.00
Arri 16S, VS Motor 11.5, 16, 25mm Schneider Lenses, Battery Belt & Case	\$ 4,995.00
Arri 16M V.S. Motor, 10, 16mm, 25, 50mm Schneider Lenses, 2-400' Mags, completely rebuilt	\$ 7,995.00
Arri 16S Body, VS Motor	\$ 2,100.00
Maurer BMJ w/finder 24FPS Motor as is	\$ 1,795.00
Maurer BM-Pro w/finder, 400' Mag 24FPS Motor	\$ 2,150.00
Maurer 05 w/finder, 400' Mag 110V VS Motor	\$ 1,995.00
Eastman Reflex w/110 Vac Motor, 400 Mag. and Case as is	\$ 1,695.00
Bolex EBM w/16-100 POE-Vario-Switar, Electric Grip Base Adapter, Battery Container, Cables & Case	\$ 3,995.00
B & H 70H Spyder, w/12VDC Motor, 2-400 Mags, 25mm 0.95 Lens and OBJ. Finder & Compartment Case, Like New	\$ 1,995.00
B & H 70DR Body only, New Demo. Camera	\$ 695.00

B & H 70KRM, Open Back, Veeder Counter, Filter Slot, 15, 25, 75mm Lenses w/ Objectives. Excellent

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B & H 70H Reconditioned Bodies	\$ 495.00
Beaulieu R16 PZ w/Ang. 12-120, Handgrip, 1000 MA Battery Chgr, 200' Mag. and Case	\$ 2,995.00
Beaulieu R16 Turrent Body Only	\$ 795.00
Beaulieu R16 PZ Body Only, Handgrip, 500 MA Battery	\$ 1,295.00
Beaulieu R16 Sing. Lens Body Only	\$ 695.00
Kodak Cine Special 1 w/2-200' Mags, w/15, 25, 63, 152mm Lenses	\$ 1,095.00
Kodak Cine Special 1 w/100' Mag	\$ 550.00
Kodak Cine Special 1 w/100' Mag, & Electric Remote Control Relgase	\$ 1,195.00
Kodak Cine Special 1 w/100' Mag, Modified By Oxberry w/Animation Mot.	\$ 995.00
CP-16A w/12 to 120 Ang. Mag. Head, Amp, 2-400' Mags, 2-Batteries, 2-Chgrs, Case, Completely Rebuilt - Excellent	\$ 7,200.00
Milliken DBM 4C High-Speed w/12 to 120 Ang. Lens	\$ 3,695.00
Milliken DBM 4A High-Speed 128/400 FPS	\$ 2,200.00
Benson Lehner 200 FPS w/Bore-Sight	\$ 1,900.00
Fairchild HS-101 High-Speed 3000/8000 FPS/60VDC	\$ 1,995.00
3" Elgeet Lens, Motor Pow. Supply, Control Box, Photosensors 16mm-1B-400 12/1000 FPS	\$ 2,495.00
Fastax WF-3 150/8000 FPS	\$ 2,795.00

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CP 16A w/12 to 120 Ang. Lens. 2-Mags, Amp. & Case	\$ 4,995.00
Auricon Cine-Voice w/Amp, 25mm Lens & Case	\$ 895.00
Auricon Cine-Voice Body Only	\$ 695.00
Auricon Pro-600 w/2 600' Mags, MA-11 Amplifier & Case	\$ 1,950.00
Auricon Pro-1200 w/1200 w/12 to 120 Ang. Lens 2-1200' Mags, MA-11 Amplifier & Case	\$ 3,750.00
Yoder Conversion	\$ 495.00
F & B Ceco Conversion-Body Only	\$ 495.00
General Camera	\$ 495.00
Solux	\$ 995.00

## CAMERA ACCESSORIES

### MAGAZINES

16mm x 400' Mitchell	\$ 225.00
16mm x 1200' Mitchell	\$ 595.00
16mm x 400' Bell & Howell	\$ 195.00
16mm x 600' Auricon	\$ 150.00
16mm x 1200' Auricon	\$ 295.00
16mm x 400' Maurer	\$ 175.00
16mm x 1200' Arri 'BL'	\$ 2,150.00
16mm x 1200' Arri 'M'	\$ 1,995.00
35mm x 400' Mitchell	\$ 195.00
35mm x 1000' Mitchell	\$ 225.00
35mm x 2000' Mitchell	\$ 695.00
35mm x 200' Bell & Howell	\$ 175.00
35mm x 400' Bell & Howell	\$ 195.00
35mm x 1000' Bell & Howell	\$ 225.00
35mm x 400' Fiber Bell & Howell	\$ 45.00
35mm x 400' Bi-Pack Bell & Howell	\$ 495.00
35mm x 1000' Bi-lateral Bi-Back Bell & Howell	\$ 795.00
35mm x 400' Bi-Pack Mitchell	\$ 495.00
35 x 1000' Bi-Pack Bell & Howell	\$ 795.00

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Mitchell 16-24V 12-64 FPS Var. Spd	\$ 350.00
Mitchell 16-24V Hi-Spd 96 FPS	\$ 395.00
Mitchell 35-12V Var. Spd.	\$ 425.00
Mitchell 35-24V Var. Spd.	\$ 425.00
Mitchell MK11-24V Var. Spd.	\$ 695.00
Mitchell Sing. Syst. 24V	\$ 595.00
Arri 16BL 12V Gov. Motor	\$ 495.00
Arri 16S 110 Vac Sync w/Power Supply as is	\$ 295.00
Stevens Bolex Var. Spd. DC Motor	\$ 150.00
N.C.E. Cine Special 110 Vac Var. Spd.	\$ 350.00
Misc. Maurer Motors	\$ 175.00

### BLIMPS

Mitchell Mark II Blimp. Excellent	\$ 4,500.00
Mitchell 16 Blimp	\$ 2,195.00
Arri-M Fiber Blimp	\$ 1,500.00
Arri-16S Blimp, Complete	\$ 1,250.00
Cine 60 Blimp for Arri 35	\$ 1,250.00

Cine 60 Blimp for Arri 35 w/Follow Focus, Rings & Ext. Tube  
Kodak Cine Special Blimp  
Maurer 05 Blimp  
Mod 600A Ceco Blimp

Sale Price

## CAMERA AND PROJECTOR MOVEMENTS

35MM Mitchell Std.	\$1,150.00
35MM Mitchell GC' Hi-Speed	\$ 1,350.00
35MM Mitchell NC	\$ 1,295.00
35MM Mitchell Sing. System	\$ 2,750.00
35MM Mitchell Hi-Speed w/Chronograph Shutter	\$ 1,395.00
35MM Bell & Howell 2709 High-Speed	\$ 1,350.00
35MM Bell & Howell 2709 Type	\$ 550.00
35MM Wall Single Perf.	\$ 795.00
35MM Wall Double Perf.	\$ 895.00
35MM Cunningham	\$ 495.00
16MM Cinerama High-Speed	\$ 995.00
Richardson TS-35-B	\$ 1,350.00
Richardson VF-35-A	\$ 3,000.00
Richardson 35-4BHR-4	\$ 2,886.00
Richardson 35-4BH-4	\$ 2,886.00
Richardson 35-8BHR	\$ 2,886.00
Richardson 35-8BH-8	\$ 3,292.00
Richardson 35-16BH	\$ 2,886.00
Richardson 70-10FG-10	\$ 3,707.00
Richardson TC-70-C	\$ 2,250.00
Richardson 70-13MS-13	\$ 2,250.00

## MISC LENSES

### C-MNTS

8.5mm F1.5 Cosmocar	\$ 169.50
10mm F1.8 Elgeet	\$ 99.50
10mm F1.6 Switar RX	\$ 325.00
10mm F1.8 Cine Nikkor	\$ 149.50
12mm F1.2 Mati	\$ 129.50
13mm F1.5 Elgeet	\$ 175.00
16mm F1.6 Tamron	\$ 89.50
16mm F1.8 Sony TV	\$ 99.50
17mm F1.5 Dallmeyer	\$ 149.50
17mm F2.5 Cine-Raptor	\$ 79.50
25mm F0.95 Angenieux	\$ 695.00
25mm F1.4 Cine Nikkor	\$ 149.50
25mm F1.4 Switar	\$ 139.50
25mm F1.5 Switar	\$ 119.50
25mm F1.4 Cooke Ivotal	\$ 139.50
25mm F1.4 Soligor	\$ 99.50
25mm F1.4 Ektar II	\$ 89.50
25mm F1.4 Elgeet Synchronex	\$ 49.50
29mm F1.0 Bausch & Lomb	\$ 350.00
50mm F1.8 Cine Nikkor	\$ 149.50
50mm F1.9 Soligor	\$ 99.50
50mm F1.5 Cine-Navitar	\$ 99.50
50mm F:2 Telekinic	\$ 69.50
50mm F2.8 Zeiss Sonnar	\$ 125.00
75mm F1.9 Switar	\$ 225.00
75mm F2.8 Yvar	\$ 99.50
75mm F2.5 Angenieux	\$ 395.00
75mm F:4 Telate	\$ 49.50
75mm F1.9 Cosmocar	\$ 79.50
75mm F1.9 Elgeet	\$ 159.50
75mm F2.3 Baltar	\$ 149.50

### ARRI MOUNTS

16mm F:2 Xenon	\$ 395.00
16mm F:1.9 Cine Xenon	\$ 449.00
28mm FL2 Kinoptik	\$ 449.00
32mm F:2 Zeiss Planar	\$ 800.00
32mm F:2 Cooke Panchro	\$ 695.00
40mm F:2 Kinoptik	\$ 499.00
50mm F:2 Planar	\$ 800.00
85mm F:2 Sonnar	\$ 395.00
90mm F2.8 Macro-Kilar	\$ 560.00
90mm F2.8 Macro-Kilar	\$ 399.50
800mm F:5 Astro-Berlin	\$ 995.00
1000mm F4-5 Omnitir	\$ 4,995.00

### ZOOM LENSES

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12-120 F:2.2 Angenieux 'Arri' (Like New)	\$ 2,200.00
12-120 F2.2 Angenieux 'C'	\$ 1,795.00
12-120 F2.2 Angenieux 'C' 7 1/2" VF	\$ 2,200.00
12-120 F2.2 Angenieux 'C' 12" VF	\$ 2,200.00
12-120 Canon Macro-Zoom 'Arri'	\$ 1,995.00
12.5-75 F2.2 Angenieux 'C'	\$ 1,895.00
12.5-75 F2.2 Angenieux 'Arri 16 BL	\$ 2,195.00
12.5-50 F1.8 Sony TV 'C'	\$ 189.50
9.5-95 F2.2 Angenieux 'C' 7 1/2" VF	\$ 3,750.00
9.5-57 F1.6 Angenieux Arri	\$ 3,250.00
12-240 F3.5 Angenieux Arri	\$ 7,995.00
35-140 F3.5 Angenieux Arri Std.	\$ 1,895.00
35-140 F 3.5 Ang. CM-3 mt.	\$ 1,895.00
25-250 F3.2 Angenieux Arri	\$ 6,700.00
25-250 Ang. Arri 'B' mt. Demo	\$ 8,050.00
28-280 F3.5 Zolomatics Arri	\$ 4,995.00
28-280 F3.5 Zolomatics BNC w/Fndr.	\$ 6,795.00
20-120 T2.9 Angenieux Arri 'B' Demo	\$ 15,650.00

✓ All Equipment Is Used Unless Otherwise Specified  
All Equipment Subject to Prior Sale  
Prices FOB, No. Hollywood, California  
California Residents Add Sales Tax

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Nous Parlons Francais  
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# Year End Sale

Misc. Lenses Available In Mitchell Std., NC. BNC. Mnts. B & H 2709, Eyemo Mnts. Wall Mnts, Fastax Mnts. Fairchild High Speed Mnts. Etc. Write or Call For Quotations.

## Sale Price

### SOUND

Complete 16mm Studio Package- Magnasync/Moviola 3-Mag Recorders, 2-Dubbers (Edge/Center Track) Rack Mounted, 3 Amp. Equalizers, Patch Bay w/Cords Mixing Console w/Talk-Back & Monitor. Interlocked Bell & Howell Projector... \$ 9,995.00  
Nagra III Recorder w/Crystal & 7 1/2 Reel Cover 2,750.00  
Arrivox Tanberg Recorder, Very Good 895.00  
Maihak Portable Reel to Reel Sync Recorder w/Cables, Cases, & 3 Neuman Mikes as is 475.00  
Optasound Sync Cassette Recorder 495.00  
Westrex 35mm Mag. Recorder, 1000' Capacity w/Power Supply, Voltage Control, Mixer, & Cables 8,495.00  
RCA Galvanometer 995.00  
Maurer Mod "F" Galvanometer 1,995.00  
Western Elec. Ser. 42 Mod. RA. 375.00  
Western Elect. Mod. RA-1437 Light Valve 395.00  
RCA Mod 1600 Portable Mixer (New, w/o Battery Pack) 375.00  
Misc. Used Sennheiser EV & RCA Mics' Inquire

### PRINTERS

Acme model 37 Step Contact Printer... \$14,950.00  
ACME model 104 optical printer: Projector/camera formats: 16/16, 16/35, 35/16, 35/35, 35/32, etc. Film capacity 1000' & 200' Bi-pack for projector; camera side 35mm 400' Bi-pack, 1000'; 16mm 400', 1200'. Lens choices—103mm, 90mm, 88mm, 65mm. Additive color lamphouse, manual rapid disconnect clutch \$45,000.00  
Bell & Howell MDL 6100 CH printer. Picture and sound, fader, Hi-speed tape reader, sola regulator with power supply. New over \$50,000.00. Excellent condition. (cc) \$33,500.00  
Bell & Howell MDL 6100 C printer. Picture and sound, fader, Hi-speed tape reader, sola regulator, title superimpose capability, w/power supply. New over \$50,000. Excellent condition. (cc) \$34,500.00  
Bell & Howell Seiki Optical Printer. 35-16-S8. Complete with all movements and lens combinations. Liquid gate projection system. Unit is "Like New" — Original Price \$125,000.00 (cc) Special Price \$85,000.00  
Bell & Howell MDL 6100 CT Additive Color Printer. Manual operation provides basic color and density balance. Includes three manually-operated light valves with 52 steps of trim. Model 6160A 1200W rectifier. Printer speed is 180/60 fpm. Film capacity, 2400 feet. One side edge light. Like new condition, less than 40 hours of operation. Current price, new \$22,490.00 Our price, like new \$19,500.00  
Bell & Howell Model D 35mm Cine Printer, rebuilt \$4995.00  
Bell & Howell Model J 16mm Cine Printer, rebuilt \$5650.00  
6200 MB Single Automatic light valve, standard speed reader, rectifier and head. New price \$28,000.00 \$17,500.00  
Bell & Howell Model JC Printer w/edge numbering light, very good condition \$5250.00  
Depue Optical Reduction Printer Model K3532, daylight operating, rebuilt, good condition \$5500.00  
Depue 35-32 Reduction Printer, as is \$1700.00  
Herrnfeld Model 35mm Printer w/shotgun color filter changer, used, as is \$ 795.00  
Kodak 35-16mm Optical Sound Track Reduction Printer, rebuilt \$5200.00  
Depue 35-32 Fish-Schurman additive lamphouse w/DC power supply, as is \$2500.00  
Depue light control board for use w/Depue Optical reduction printers. Provides 22 light changes, 75 or 150 scene changes, used \$ 450.00  
DC Power Supply \$ 495.00

**All Prices Subject to  
Change Without Notice**

### PROCESSORS

## Sale Price

Hollywood Film Co. C2, Ultrasonic Film Cleaner. New price \$15,000 \$12,000.00  
Hollywood Film Co. Loop Cabinet, eliminates rethreading negs. in the printer for each pass. Outside roller bank changeable for right to left or left to right operation \$ 4,000.00  
Eastman Kodak 35mm Film Waxing Machine \$ 1,050.00  
Eastman Kodak 16mm Edge numbering machine \$ 2,495.00  
EL 13A, 16/35/70mm Film Drying Cabinet \$ 3,400.00  
Houston-Fearless Model S120 PN B&W 16/35 Hi-Speed Spray Processor, 18-150 fpm. Excellent condition \$5500.00  
Jamieson Model 65 Ektachrome ME 4 35/16mm Film Processor. 6 feet per minute. For 5038, 5256, 5257, 5258 or 110, 126, 135 Films. 220 volt Single or Three Phase, 50/60 Hz. Sold new \$11,900.00. Good condition \$7150.00  
Fulton Tube Machine \$ 995.00  
16mm Loop Elevator \$1250.00  
Treise MDL ME-4 16/35 color negative processor. 35mm @ 50' per m. — 16mm @ 37' per m. complete with flowmeters, valves, heat exchanger, thermostats, air compressor for impinging air squeezes, many spare parts. Excell. cond. Original cost approximately \$140,000.00 S/P \$65,000.00  
Houston Fearless Lab Master MDL L 16/35 N.P. Neg/pos w/speeds to 40 fpm. Daylight load operation, open face construction. New cost approximately \$8000.00. Used \$3995.00  
Fulton 16mm ME-4 color tube type processor. Good condition \$1695.00

### PROJECTORS

1-PR 16mm Norelcos w/2500 Watt Hughes Xenon Lamphouses, Solid-State Power Supply, Change-Overs, Pedestals, 1 1/2" Lenses, 2 1/2" Lenses, Anamorphic Lenses, New Price 22,000. Used only 500 Hrs. Excellent Condition complete \$12,750.00  
Bolex 16mm Opt/Mag. Completely Overhauled 1,795.00  
Bell & Howell 16mm 302 Opt/Mag 495.00  
to 695.00  
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Bell & Howell 16mm 552 Autoload 495.00  
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RCA 1600 275.00  
Graflex 815 495.00  
Bauer P5 Opt/Mag. 695.00  
Kodak Pageant AV-256-TR 995.00  
Siemens Interlock PB. Only as is 1,695.00  
L & W 224A Analyst (No Control Cable) 550.00  
Kodak Analyst w/Remote Excellent 595.00  
Misc. Used 16 and 35mm Projection Lenses

### EDITING

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Moviola 16mm K-20 Cutter Table Model 695.00  
Moviola 16mm L-20 Table Mod. w/TU Arms 1,195.00  
Moviola 35mm Previewer. 8 1/2 x 11 Viewing Screen, Console Mod 1,695.00  
Ceco 16mm Pro Jr. Viewer Reconditioned (No Cable) 150.00  
Zeiss 16mm Moviscope Viewer 225.00  
Pro Jr. 16mm Ediola 2-Gang Synchronizer w/under-Reading Mag HDS, Sync. Amp. Base HRS. Min. Sec. Counter 375.00  
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Moviola SRM RDR w/Spkr. 79.00  
Precision Mod 900 Spkr/Amp. 49.50  
Robot II Auto 35 Splicer w/Pos/Neg. Pins 299.50  
HFC-FSC-1A 35mm Hot Splicer, Excellent 327.00  
Schoen Mod. 1962 35mm Tape Splicer 75.00  
Moviola 16mm Show Timer 118.00  
Newmade 2-35/2-70mm Combination Synchronizer 425.00  
Moviola 1-16/1-35mm Combination Synchronizer 295.00  
Cine Craft 2-16mm Synchronizer 125.00  
Moviola 4-Gang 16mm Synchronizer w/1 Mag Head 225.00  
Griswold 8/16 Cement Splicers 40.00  
35mm "Vintage" 3 Gang Synchronizer 125.00  
Cine Pacer Synchronizer Motorization Kit 200.00  
Veeder Root Counters (New) 35.00  
"Film-O-Hand" Edit Ready 16mm Trays 8.00

### LIGHTING

## Sale Price

Genarco Solar Follow Spot w/Pedestal \$ 2,195.00  
Kliegl 10K's 245.00  
Kliegl 5K's 195.00  
Mole Richardson 5K's 180.00  
Mole Richardson 2K's 95.00  
Bardwell McAllister 2K's \$75.00 ea. 3 for 200.00  
Colortran 2K Softlight 175.00  
Lowell Soft Light (Floor Demo) 159.00  
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Compact Stand 20" to 89" (New) 55.00  
Master Stand 40" to 135" (New) 85.00  
SV Castered Stand 39.95  
Century Gobo Stands Partially Complete 25.00  
Colortran 6' Anti-"G" Hangars (Like New) 145.00  
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### CAMERA SUPPORT AND GRIP

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TV Pedestal, large wheel, Hydraulic \$ 495.00  
Quick-set Gibraltar Cradle Head w/legs, center post & dolly \$ 1,195.00  
Quick-Set Samson Tripod w/Fluid Head (Like New) 675.00  
Arri-16mm Tripod w/Ball & Pan & Tilt Head (New) 683.00  
Arri-16mm Baby Legs (New) 390.00  
Ronford Fluid 2 Head and Legs (New) 765.00  
Pro Jr. Legs 75.00  
Arri 35 Ball Top Legs (New) 595.00  
AGE Mitchell 35 Hi-Hat (New) 65.00  
AGE Pro Jr. Hi-Hat 35.00  
AGE Super Grip Kit (With "L" Bracket, Wrench Mnting, Screws, Stud, Case) 375.00  
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Mole Richardson Perambulator Mike Boom 2,495.00  
Westinghouse HC101 Anti-Vibration Mount w/Sensors For Pan, tilt, and Yaw 12,500.00  
STEADI-CAM Universal complete, including video assist unit w/ACL adaptor. Demo. List Price \$29,600.80 Sale Price \$19,995.00

### MISC AND UNUSUAL

Mitchell "BNC" Matte Cutters \$ 295.00  
Mitchell Timing Light Block 125.00  
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### CCTV SURVEILLANCE SYSTEM

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AGE Arri Viewfinder Extender 495.00  
Auricon MA-11 Amp. Complete w/Cables and Case 900.00  
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Arri 35 BL Shoulder Brace 195.00  
Right Angle Prism Projector Attachment 125.00  
Editing Bins w/Liners 85.00  
B & H Pedestal Splicer 2,195.00  
JVC. Mod. 7860 UM Color Monitor. List \$980.00. New Demo 660.00  
JVC Mod. CR 6300U Color VTR List \$2195.00. New Demo \$1,725.00

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# NEW IANIRO LIGHTS AT PHOTOKINA '80



From a famous Italian designer/manufacture comes a new line of varied and versatile luminaires for film and television lighting

QUARTZCOLOR IANIRO took the occasion of *PHOTOKINA '80* to introduce a variety of new luminaires. What follows is the manufacturer's own description of these items:

## NEW "MIZAR", 300-500 W, SPOTLIGHT MODEL 250

A complete new portable spotlight replacing the old Mizar mod. 204.

This small and compact unit, made of die-casting aluminum, consists of two half shells.

It is easily opened by means of a back fiberglass handle allowing immediate

and complete access for replacement of the lamp.

The lamp carriage translates through a back handle, also made of fiberglass, to achieve the spot and flood positions.

The stirrup is fitted with female bush  $\phi$  16mm (5/8") for connection with various types of supports.

Overall dimensions complete with stirrup. 164 (W) x 261 (H) x 132 (D) mm.

Weight with cable, less accessories: 1.8 Kg.

Halogen tungsten lamp of 300 and 500W can be used (in future 150W lamp too), utilizing socket type GY9.5.

The Fresnel lens has a diameter of 80mm.

Particular care has been given to the cooling and ventilation system which guarantees the use of lamps up to 500W and permits the retaining of glass fragments in case of lamp explosion.

The combination of illumination, easy handling and all the above characteristics make the NEW MIZAR very advanced and welcomed on our large range of luminaires.

## "PULSAR" LIGHTWEIGHT FLOODLIGHT, 650 W MOD. 3130, IN FIBERGLASS

This unit represents the latest and most compact portable type of floodlight. It is made of fiberglass material for light weight, high heat and shatter resistance.

It can be handled at any time when operating.

Lamp movement for spot and flood positions is controlled by a rear handle also of fiberglass.

The holder to fix all accessories is built in one piece with the unit.

The cable is 3.5m long with inline switch; the lamp socket is GY9.5 type.

The PULSAR can use the following lamps: 650W 220 or 240V; 600W 120V; 250W 30V (for use with batteries).

Overall dimensions: 140 (W) x 230 (H) x 170 (D) mm.

Weight with cable, less accessories: 1.7 Kg.

Accessories:

barndoor	mod. 3131.175
daylight filter	mod. 3132.185
double scrim	mod. 3133.181
single scrim	mod. 3133.182
half-double scrim	mod. 3133.183
half-single scrim	mod. 3133.184
outrigger color frame	mod. 3134.166

## "ALTAIR" SPOTLIGHT 1 kw, MODEL 2170, FOR CID DISCHARGE LAMP

This new model has been developed to allow utilization of the latest Thorn CID arc lamp, mounted on a G38 bipost socket, a most modern alternative to HMI double-ended lamp. The CID lamp characteristics are:

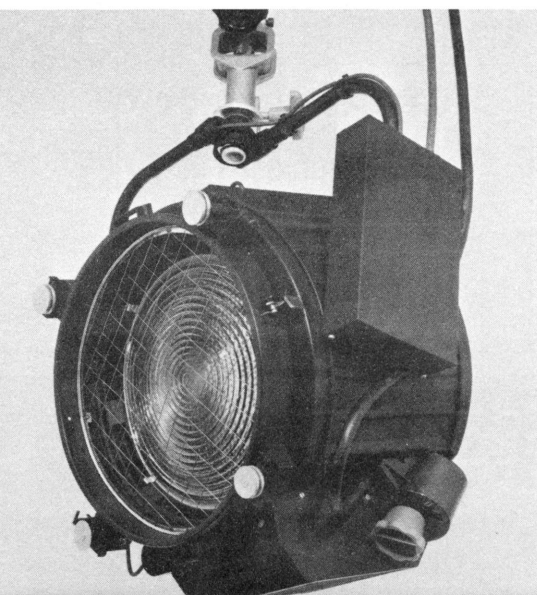
- hot restart
- 70 lumen/W
- color temperature 5500°K  $\pm$  400
- color rendering index 85 Ra

The ALTAIR spotlight originates from the Sirio 1.2kW and it is using the same basic components and optical system



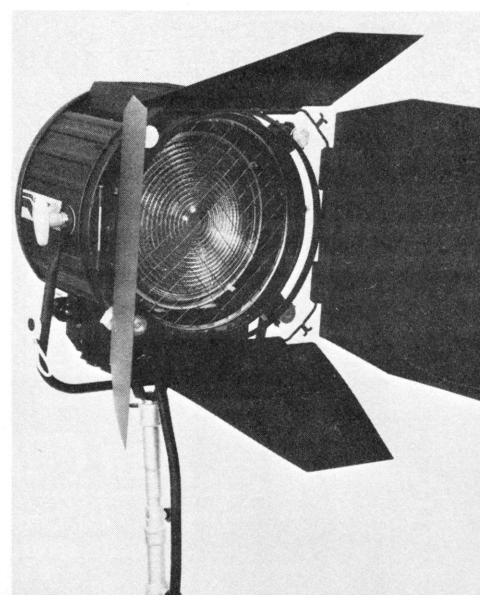
"MIZAR" 300-500W SPOTLIGHT

## MOTORISED SPOTLIGHT



"ALTAIR" 1KW SPOTLIGHT

## "ALTAIR" 2.5KW SPOTLIGHT





utilizing the same ballast too.

Dimensions: 430 (W) x 690 (H) x 360 (D) mm.

Weight with cable, less accessories: 16.2 Kg.

#### "ALTAIR" SPOTLIGHT 2,5 kw, MODEL 2180, FOR CID DISCHARGE LAMP

A new model allowing utilization of latest Thorn CID arc lamp as an alternative to HMI double-ended lamp.

The CID lamp characteristics are:

- hot restart
- 70 lumen/W
- color temperature 5500°K ± 400
- color rendering index 85 Ra

The ALTAIR spotlight 2.5 kW originates from the Sirio 2.5 kW and it is using the same basic components and optical system utilizing the same ballast too.

Dimensions: 550 (W) x 730 (H) x 360 (D) mm.

Weight with cable, less accessories: 23 Kg.

#### "POLARIS" BAMBINO 1 kw, MODEL 660

The POLARIS BAMBINO unit is a development of the standard Polaris (series 260) with much smaller dimensions and weight, but keeping the same high qualities and optical performances.

This spotlight is suitable for manual operation only, due to its very small size.

The Fresnel lens of 130mm diameter is mounted on a lens door provided for front opening allowing easy access for lamp replacement.

It can be delivered with two lamp holders:

- G22 medium bipost
- GY9.5 type.

The POLARIS BAMBINO can use lamp of 500 up to 1000W at various voltages: 120V; 220 or 240V.

The cable is 3.5m long complete with inline switch.

The stirrup is fitted with female bush of diameter 16mm (5/8")

Overall dimensions: 225 (W) x 345 (H) x 255 (D) mm.

Weight with cable, less accessories: 3.7 Kg.

#### MOTORIZED SPOTLIGHTS

A motorized version for the POLARIS, CASTOR and POLLUX spot lights has been recently produced, increasing the possibility of these models already in the market with big success.

Full automatic operation is achieved by means of three strong, independent and very compact electric d.c. motors complete with reduction gears and clutch coupling to allow pan, tilt and focus adjustment.

Voltage 12V d.c.



"PULSAR" FLOODLIGHT

"POLARIS" AMBINO 1KW



Currents in the range of 100mA to a maximum of 1400mA.

On normal conditions pan rotation is as wide as 350 degrees, tilt angle as large as 90 degrees from horizontal to vertical positions, meanwhile focussing it is performed on the whole length for normal spot and flood positions.

Speeds are, on normal conditions, 1 minute approximately for full travel of 350 degrees for panning operation, 20 seconds approximately for full travel of 90 degrees for tilting operation and 6 seconds approximately for a travel between spot and flood positions.

A special stirrup has been designed to support the two motors for pan and tilt, gear and clutch box. Control is effected by either a portable individual control box or a console located on a studio floor connected with the spot lights through a multi-core cable.

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## Nicolas Downie

Semmering, Barnet Road  
Arkley, Herts  
Great Britain

August 4, 1980

Herewith my qualifications, or lack of them, for making the sweeping generalisations on the next two pages.

Before becoming a cameraman, Nick Downie was a professional soldier for 6 years, which included 3 1/2 years in the SAS and active service on four campaigns. He is now an independent film-maker, specialising in guerrilla warfare.

So far he has spent 3 months with the Pesh Merga guerrillas in Iraqi Kurdistan, 3 months with the Eritrean guerrillas, 6 weeks with Polisario in the Western Sahara, 6 months with the Rhodesian Army and, most recently, 4 months with the guerrillas in Afghanistan.

In 1977 he won The Royal Television Society's News Feature Award for Polisario, and in 1978 he won it again for Rhodesia. The Rhodesia film was also the ITV Nomination for Monte Carlo.



Overheard on location : German sound-recordist, pointing at my Aaton, "What sort of camera is that?" German cameraman, "The best".

On my first day in Afghanistan we marched for fifteen hours non-stop. It was August and very hot. We crossed two passes — a total of 5000 feet going up and 6000 feet coming down. Throughout that time my Aaton perched comfortably on my shoulder, and I know of no equivalent camera which is so easy to carry. It is a tribute to the Aaton's ergonomic design that I ended the day just with blisters and not a heart attack.

Aaton magazines are child's play to load and unload. Too many other cameras leave you struggling in the changing bag with a roll of film that is liable to uncoil as it comes off the spindle. Normally that only results in irritation all round and a few minutes' delay, but get caught like that as a helicopter gunship clatters over the brow of a hill and the delay is liable to be permanent.

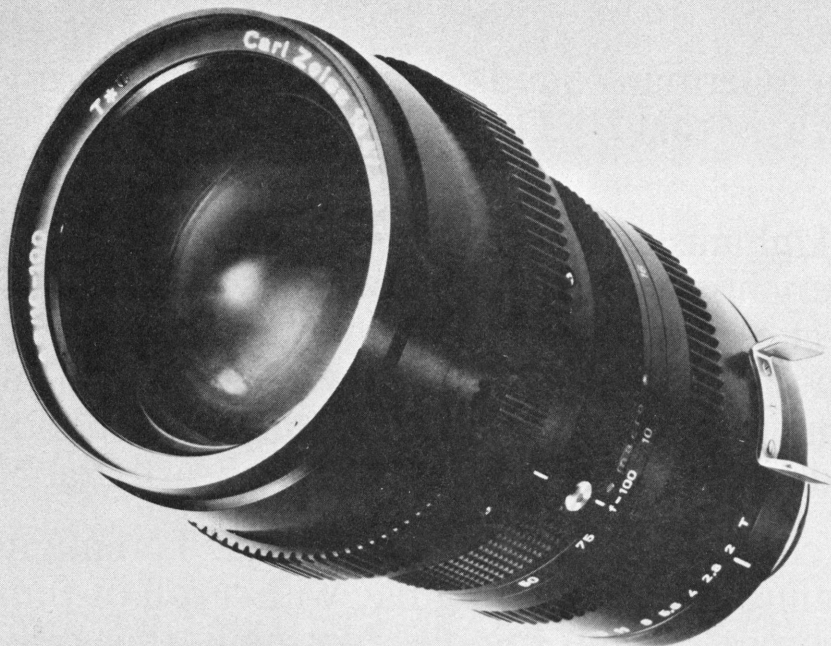
It is a common misconception that the camera best-suited to filming a war should be built like a tank. The trouble is, those cameras make a noise like a tank on the sound-track. Even in the middle of a battle there are moments of quiet when a well-blimped machine is just as important as on location in the home counties. One of the most valuable qualities of the Aaton is its silence.

When filming a battle, there is no worse experience than seeing one's companions making a hasty exit. Men carrying just a rifle and a bandolier can disappear with unnerving rapidity, and it is a grave disadvantage to be left lugging a heavy or unbalanced camera, trailing battery cables. The Aaton is light, neat, and easy to run with, even with legs that are turning to jelly.

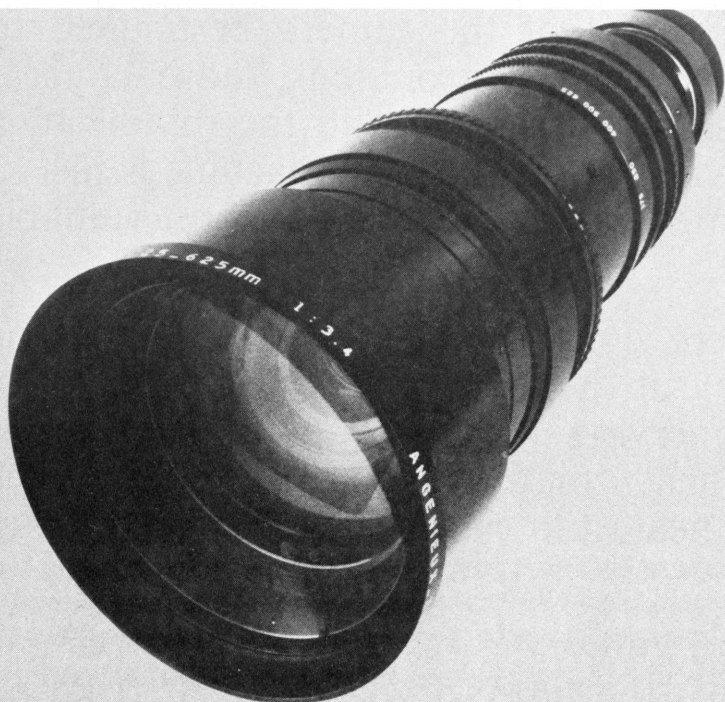
With all the other cameras I know, the day you drop the thing in a river in the middle of nowhere, is the time to go behind a rock and quietly cut your throat. With an Aaton you simply produce half-a-dozen Allen Keys, strip it down, and give it a good clean. Blow the electronics, and it takes five minutes to replace them with a set of "Red Spares".

When you're freelance, and about to invest thousands of hard-earned pounds in a camera, you think for a long time before chatting-up the bank manager. I bought my Aaton after I'd tried all the other comparable makes, usually under fire, and the Aaton was the only one which met every specification.

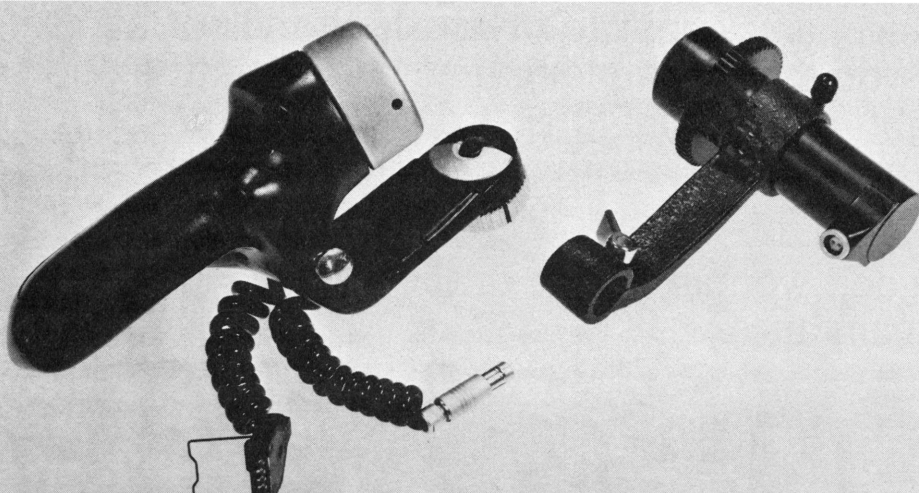
An Aaton is like a good woman : some of the best qualities only emerge after prolonged acquaintance.



The Zeiss Vario-Sonnar 1.8/10-100 T2 lens for Arriflex 16 combines very high speed with excellent image quality and compact construction. The high maximum aperture of f/1.8 is maintained over the complete focal length range. (BELOW) The Angenieux Zoom 25 x 25 T4-T8 for Arriflex 35 has a focal length range of 25 to 625—a 25-fold magnification.



Servo-Zoom for Arriflex 16mm cameras. To make possible the optimal setting of zoom lenses in conjunction with 16mm cameras, Arri engineers have developed this new zoom drive, which consists of the motor, the motor mount and the zoom hand grip. The zoom range can be steplessly adjusted between 0.8 seconds and 6 minutes.



## ARRI AT PHOTOKINA '80 Continued from Page 1235

and brilliancy.

### ANGENIEUX ZOOM 25x25 T/4-T/8 FOR ARRIFLEX 35

This new lens, for ARRIFLEX 35mm cameras, has a focal length range of 25 to 625mm. As the first lens with a 25-fold magnification range for 35mm film, it provides excellent optical quality at every setting. The aperture values are T/4 at 25mm focal length to T/8 at 625mm focal length. The greatest image ratio is 1:1.24. This gives an image scale of 0.8. Thus, with longest focal length setting and shortest focus setting, an object measuring 20 x 27mm can be shot filling the frame. The nearest focussing distance is 1.3 m (4').

The Angenieux Zoom 25 x 25 is a precision tool of highest optical and mechanical quality. It is robust and weighs approx. 5 kg (12 lbs).

The new Angenieux Zoom 25 x 25 is an interesting addition to the extensive range of lenses available for ARRIFLEX 35mm cameras.

### ASPHERON® SUPER WIDE ANGLE SUPPLEMENTARY LENS "5666"

Fitting the existing 9.5 and 12mm high speed Zeiss Distagon lenses with the Aspheron® Super wide angle supplementary lens "5666" opens up a fantastic range of applications. With this the owner of the above Distagon lenses has two new high speed wide angle lenses whose qualities have not been surpassed:

Short focal length of 5.6 or 6.6mm

High aperture ratio of f/1.2

No picture distortion

Very large depth of focus even with maximum aperture.

These results have only been made possible by the introduction of new optical concepts and calculating methods as well as advances in the manufacture of aspherical surfaces.

The wide angle adapter is not a normal spherical lens. So as not to affect the excellent quality of the basic lens, the adapter lens has a high optical niveau and an optimal form calculated by computer. It is a unique multi coated glass meniscus lens which enables an enlargement of the viewing angle without loss of light and without distortion of the picture.

### ARRIFLEX LIGHTWEIGHT SUPPORT

This compact and light-weight support unit has been especially conceived for shoulder use of the ARRIFLEX 16 SR and 35 III cameras together with in Light-Weight Follow Focus System,



the Zoom Drive, the Bellows Matte Box, and the Mount for the Light-Weight Matte Box (for standard lenses to 8mm Distagon).

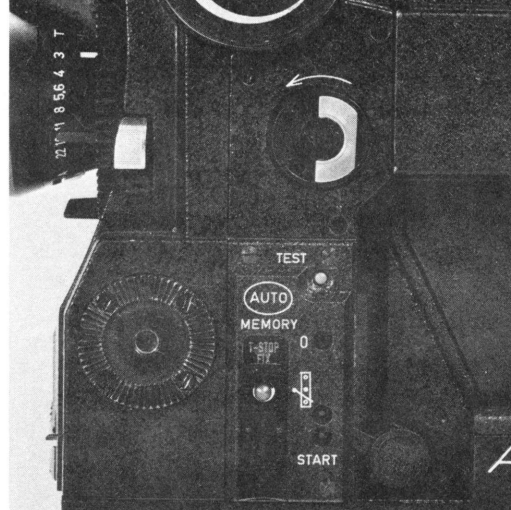
The older models of the bellows matte box, as well as the mount for the light-weight matte box, can be adapted for use by changing the guide rail part. This new ARRIFLEX light-weight support has been designed as a light-weight alternative to the tripod bridge plates (Cat. No. 4517 or 3770). The light-weight support is fastened to the mounting shoe on the front of the Arriflex 16 SR and to the camera adapter with mounting shoe with the 35 III. This support unit can be quickly fastened to the camera without any problem.

#### ARRIFLEX LIGHTWEIGHT FOLLOW FOCUS SYSTEM

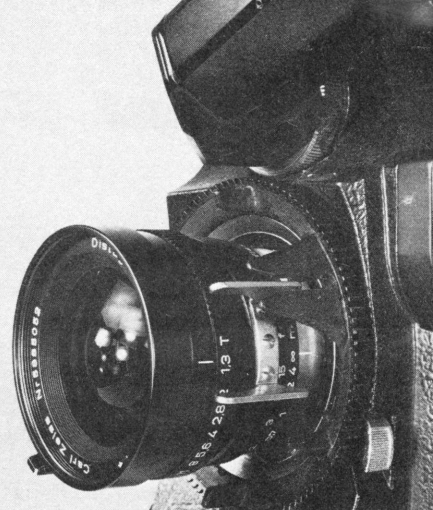
This new accessory for ARRIFLEX 16 SR and 35 III cameras makes follow focussing considerably easier by the camera assistant.

The light-weight follow focus system can be used with the following 16mm zoom lenses which must be fitted with a gear ring

Angenieux f/1.6-2.4/9.5-57mm  
Angenieux f/2.2/12-120mm  
Angenieux f/2-2.8/10-150mm  
Angenieux f/1.1/16-44mm  
Vario-Sonnar f/2.8/10-100mm



(LEFT) On the Arriflex 16 SR II the memory button stores the diaphragm value received from the automatic system. The lens diaphragm is completely automatically controlled by a servo motor dependent on brightness of the scene AND frame speed. (RIGHT) Geared drive ring for the focal drive.



Vario-Sonnar f/1.8/10-100mm as well as with fixed focal length standard and high speed lenses for both cameras.

With the ARRIFLEX 16 SR the last mentioned lenses are driven via a new geared drive ring which can also be fitted to existing lenses. 35mm high speed lenses must be fitted with an additional focus gear ring. To make the unit even more easy to use, in addition to the focus lever, there is a flexible shaft available. Both the focus lever and the flexible shaft are identical to those of the universal follow focus system.

The focus marking discs from the universal follow focus system can also be used.

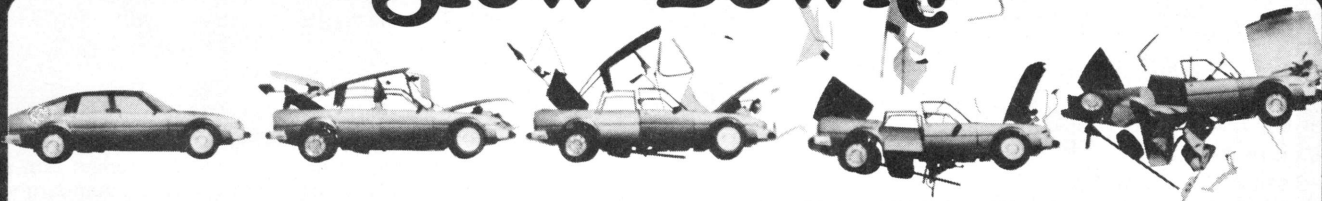
Weighing only 470 g, this compact light-weight follow focus system is most suited for shooting from the shoulder.

#### SERVO-ZOOM FOR ARRIFLEX 16mm CAMERAS

To enable the optimal setting of zoom lenses in conjunction with 16mm cameras our design engineers have developed this new zoom drive which consists of the motor, the motor mount and the

Continued on Page 1296

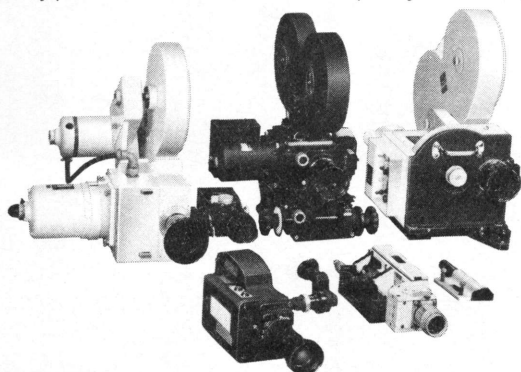
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# NEW FROM LEE ELECTRIC



As HMI continues to ride high, two new "flicker-free" ballasts are introduced, plus a new line of HMI lamps for motion picture lighting

Lee Enterprises Limited, the world's foremost film and television lighting company, scored a resounding hit at *PHOTOKINA '80* by maintaining the most picturesque and busiest beer bar on the grounds. Designed like a Paris bistro, the service was strictly English pub, and the camaraderie flowed like wine.

In addition to dispensing beer with true *élan*, the company has, for a number of years, been in the forefront of the development of advanced lighting equipment for the film and television industries. Most recently their efforts have been directed toward the technology of HMI lighting and it was in line with that policy that they displayed on their stand at *PHOTOKINA '80* two new "flicker-free" ballasts for HMI lighting units, described as follows:

## 1200 HMI BALLAST

### Advantages:

Completely strobe-free.  
Uses standard 115V D.C. supply.  
High efficiency: approximately one-third of the light output of a Brute arc for one-twentieth of the current.  
Lead out to lamp head: 4-core lead.  
Auto-start if input or output is interrupted.

### Specifications:

Size: 13.4 x 16.5 x 12.4 inches  
Weight: approx. 24 lbs  
Power input: 115V D.C.  
Lamp current: 13 amps  
Heat dissipation: 175 watts  
Light output of lamp: 110,000 lumens

## 2500 HMI BALLAST

### Advantages:

Completely strobe-free.  
Uses standard 115V D.C. supply.  
High efficiency: one-half the light output of a Brute arc for one-twentieth of the current.  
Lead out to lamp head: 4-core lead.  
Auto-start if input or output is interrupted.

### Specifications:

Size: 13.4 x 16.5 x 12.4 inches  
Weight: 40 lbs  
Power input: 115V D.C.  
Lamp current: 24 amps  
Heat dissipation: Approx. 300 watts  
Light output of lamp: 240,000 lumens.

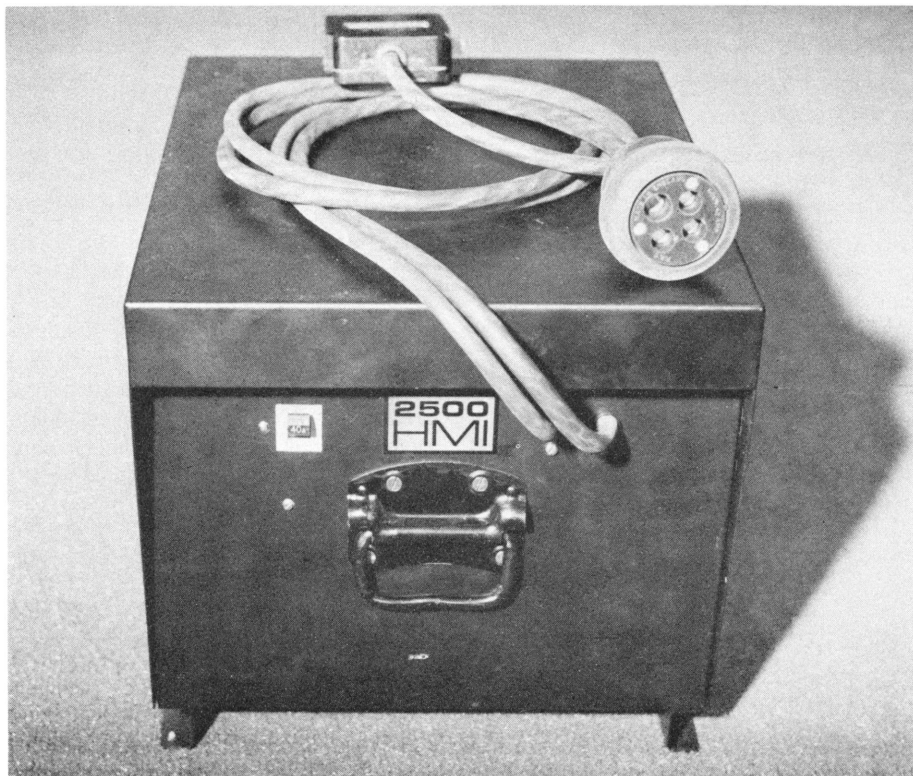
Technical development of these ballasts is by Synclock Electronics Ltd. and they are being marketed by Lee Enterprises Ltd.

Lee also displayed on their stand their new line of DAYMAX HMI lamps in units of 575W, 1200W, 2500W and 4000W.

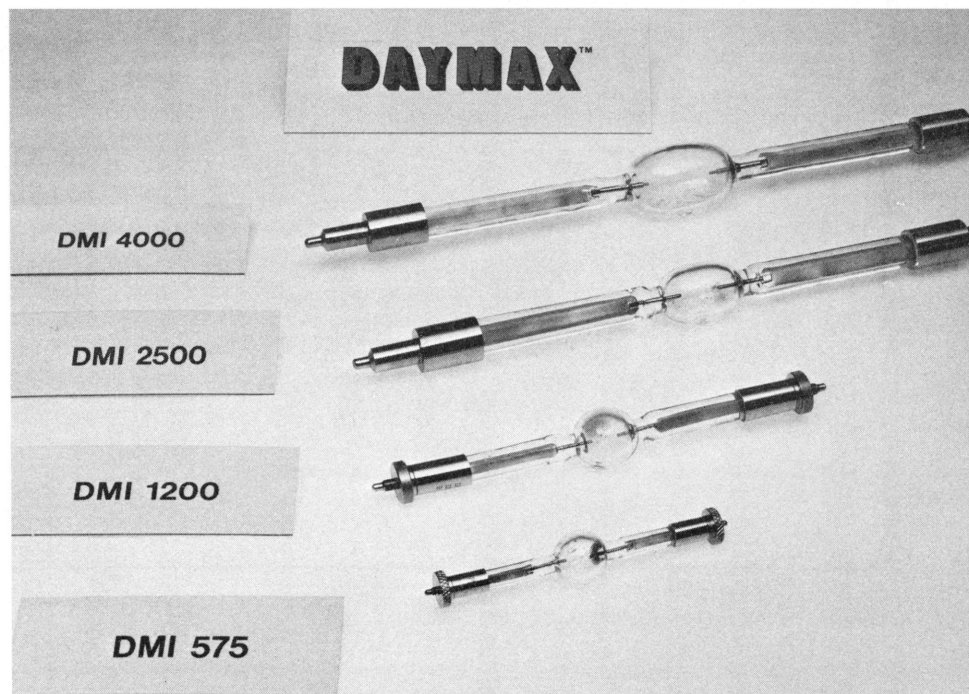
These American-made lamps are manufactured by ILC Technology of Sunnyvale, California, a company specializing in the most sophisticated

Electro-optics and Pulsed-power for science, industry and government.

For further information concerning these products, contact: Lee Enterprises Ltd.; 128 Wembley Park Drive, Wembley, Middlesex HA9 8JE; Telex: 924743; England; Telephone: 01-903 9811 (10 Lines) ■



The new 2500 HMI "flicker-free" ballast, developed by Synclock Electronics Ltd. and marketed by Lee Enterprises Ltd. There is also a 1200 HMI model. Both use standard 115V D.C. supply, are compact and lightweight. (BELOW) Also marketed by Lee Enterprises Ltd. is this new line of DAYMAX American-made HMI lamps manufactured by ILC Technology of Sunnyvale, Calif.





# EXTEND YOUR HORIZONS WITH CENTURY TELE-ATHENAR II LENSES.

When you're on the edge of infinity and need that extra reach, look to Century to get you there.

Our Tele-Athenar II lenses are specifically designed for professional motion picture, video and still photography, and offer exceptional light transmission, superb color correction and critical sharpness unmatched in the industry.

The Tele-Athenar II series is available in nine focal lengths from 230mm to 1200mm, and features fast-acting, non-rotating focusing and an interchangeable mount system. Thus, a single Tele-Athenar II may be used on a wide variety of cameras in all formats up to and including 35mm double frame still.

Every Century lens is *individually optically bench-tested* prior to shipment, and carries a one-year warranty against defects in material and workmanship. The result is a lens with optimum performance characteristics that is lightweight and easy to handle, yet rugged enough to withstand the rigors of location shooting.

So if you're horizons have been limited, let Century Tele-Athenar lenses help you go a step beyond.

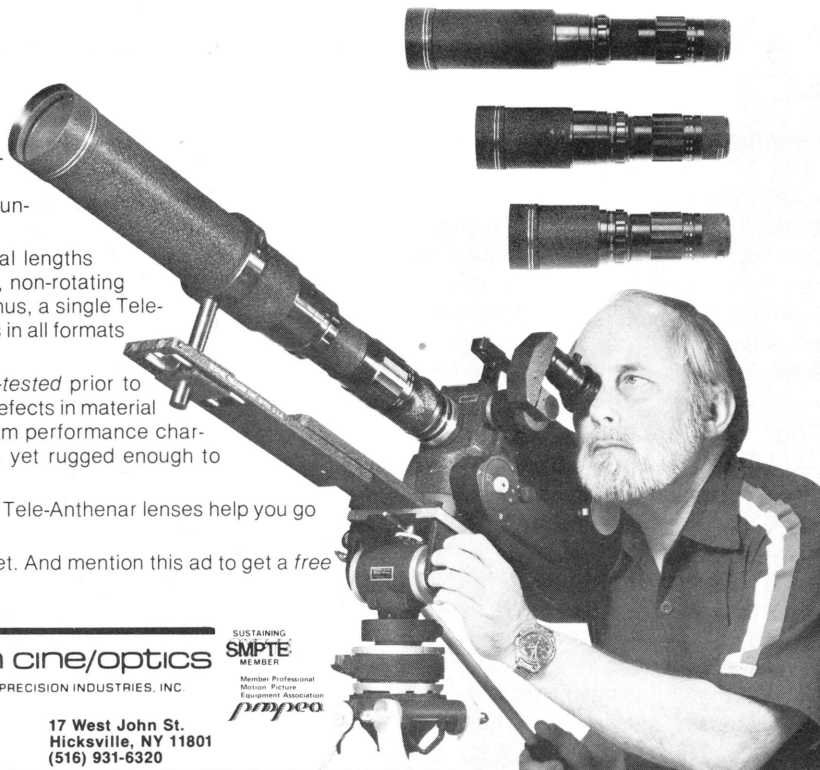
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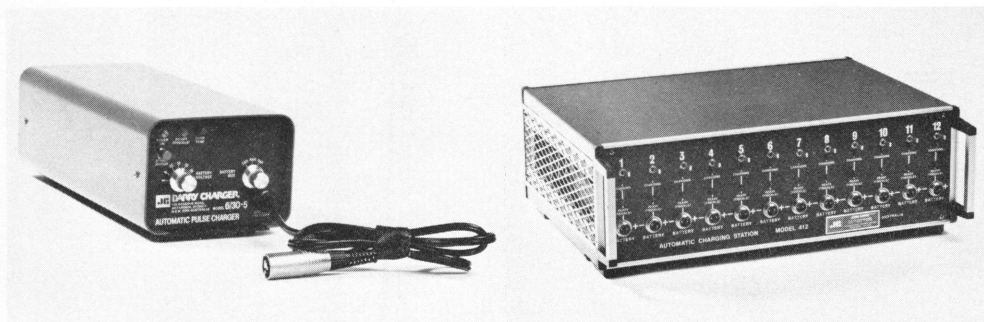
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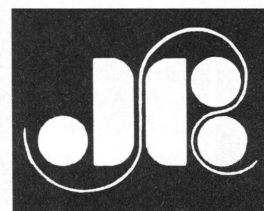
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# NEW HMI UNITS FROM RDS



Introducing two new high-efficiency daylight lamp sources in heat-free polycarbonate/fiberglass housings that make them even cooler to handle

New from Ryudensha Company, Ltd. at PHOTOKINA '80 were the UNI-FOCUS HMI 200 and UNI-FOCUS HMI 575 units on display. These are high-efficiency daylight lamp sources in professional new heat-free housings for TV on-location, newsfilm and motion picture applications.

Both units share the following features:

High-efficiency daylight, 5600 ( $\pm 400$ )°K

Safety operation—The polycarbonate/fiberglass housing is totally heat insulated, thus eliminating the possibility of burning the hands when operating. Ignition circuits are completely isolated and trouble-free.

A front safety glass cuts the UV light and the integrated safety micro switch automatically cuts power when the front glass is damaged.

## UNI-Focus HMI 200

A professional high-efficiency daylight luminaire that is hand-held or on-stand operative, with power from AC main or battery.

Smooth and unprecedented wide focusing ratio of 6:1.

The tough, lightweight and compact construction lends it extreme portability.

24V 8AH Nicad Battery Pack with plug-in power supply is available for approximately 30-minute operation. Battery charger and adaptor for power supply from and other 24V batteries are also available.

### Specifications:

Model: UFH-2, HMI 200  
 Rating: AC 120V 50/60Hz, 220/240V 50Hz or DC 24V  
 Power consumption: Approx. 2.2A at 120V, 1.2A at 220V for AC mains  
 Yoke: 6/8" holes block to fit 5/8" spud  
 Switch on/off: Both operative from head and power supply  
 Finish: Black

### Performance data:

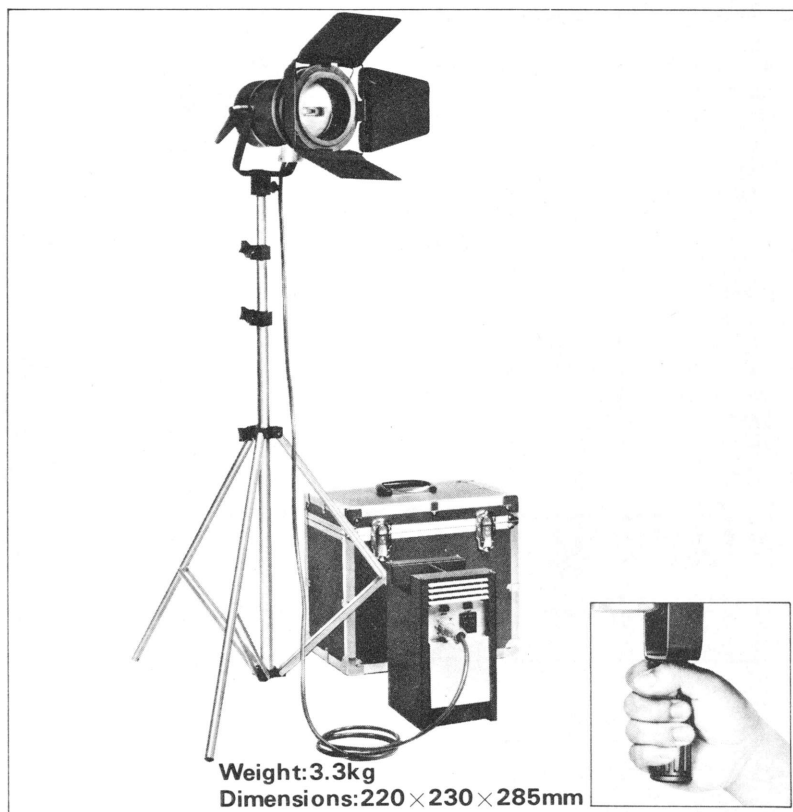
Lamp: Osram HMI 200W  
 Distance: 3M  
 Unit: Lux

## UNI-Focus HMI 575

A professional high-efficiency daylight flood light.

Its tough, lightweight and compact construction lends it extreme portability.

Continued on Page 1292



THE UNI-FOCUS HMI 200 LIGHT

## THE UNI-FOCUS HMI 575 LIGHT





# CAMRAPROMPTER

**Cinema Products' unique film/video camera prompting system: low-cost, compact, light-weight, easy to set up and simple to operate!**

- Bright, easy-to-read script. Ultra-silent operation.
- The *Camraprompter*\* utilizes a clear acrylic optical flat (set at a 45° angle in front of the camera lens) which acts as a mirror reflecting the back-lit script "scrolls." The system functions with virtually no light loss to the lens.

- A small remote control unit provides continuously variable speed control (forward or reverse). Permits convenient self-pacing by "on camera" subject. Script can also be easily read and controlled from the side of the *Camraprompter* unit.

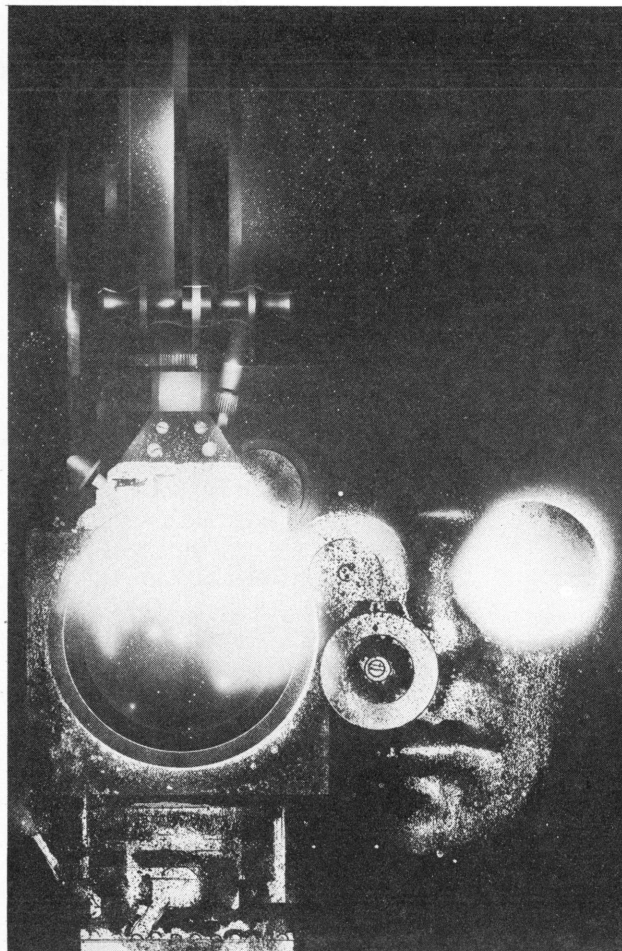
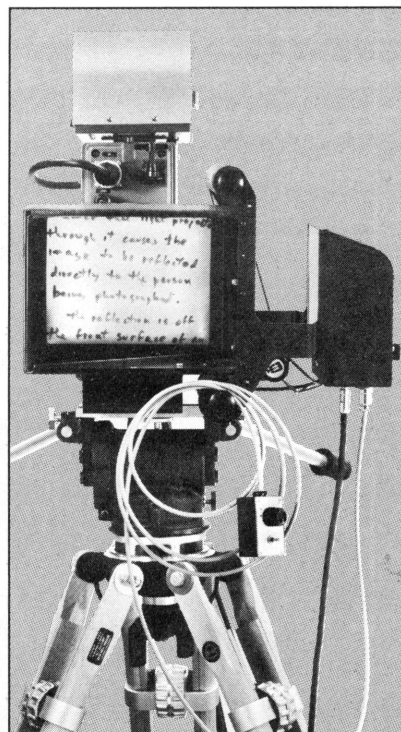
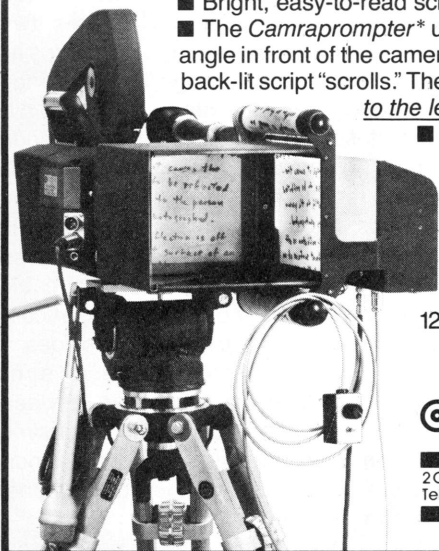
- Entire system is powered by standard 12V battery pack or belt.

For further information, please contact:

**cinema E products**  
CORPORATION

Technology In The Service Of Creativity  
2037 Granville Avenue, Los Angeles, California 90025  
Telephone: (213) 478-0711 • (213) 477-1971 • Telex: 69-1339

\*Patents pending.



  
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### THE NEW CP-35 CAMERA FROM CINEMA PRODUCTS Continued from Page 1237

operate the basic camera system to be incorporated on a single printed circuit card measuring approximately 11cm square. The card has two quick-disconnect cable connectors so that field replacement of the entire camera circuitry can be accomplished by an unskilled individual in less than ten minutes.

A completely self-contained crystal-controlled drive motor features two modes of operation: either 24 or 25 fps as the prime rate (with high/low fps range selection). This provides a total of 13 different switched speeds in each mode (ranging from 6 fps to 96 fps in the 24 fps mode, and from 6¼ fps to 100 fps in the 25 fps mode). Continuously variable speed (from 6 to 100 fps) is made possible by means of a remote control cable that can be plugged into the output connector. This connector also provides a mid-shutter pulse for use in synchronizing the film camera to a video screen. Audible and visible out-of-sync warnings are provided (the visible indicators are located on the control panel and in the viewfinder).

The drive motor is an extremely powerful permanent magnet type that is integral to the camera. The drive motor and all the camera circuitry can be operated from any power source that has a voltage of 12 to 32 volts DC. Pulse width modulation keeps power consumption constant over a full range of input voltages. For speeds up to 100 fps, however, the power source has to be at least 24 to 32 volts DC. Power consumption at 24 fps is approximately 25 watts.

A unique design feature of this camera, which we pioneered in the CP-16R, is the inclusion of an "on-board" battery. This plug-in battery has the capacity to run at least four 120m magazines (operating at 24 or 25 fps). This feature makes the camera totally self-contained for maximum flexibility in hand-held operation. Battery condition indicators are provided via a low battery light in the viewfinder and a condition meter located on the control panel.

Two "Quad" (quick acting displacement) magazines are available, one 120m and one 300m capacity. Both magazines feature steel toe and heel plates for minimum wear, ultra lightweight housings, single-latch removable cover, footage remaining indicator, anti-spill brake on the supply spindle, and easily cleaned velvet light trap rollers. Both magazines are installed on the camera via a positive locking, snap-action latch mechanism. The magazines are extremely simple in



# CALL FOR ENTRIES FOR THE USA FILM FESTIVAL/ ROCKWELL INTERNATIONAL SHORT FILM COMPETITION

35mm & 16mm Competition in Animated, Dramatic  
Documentary and Experimental Films

Entry Deadline: February 1, 1981

The USA Film Festival/Rockwell International Short Film Competition was begun in order to recognize excellence and exceptional creativity on the part of the USA's independent and student filmmakers. In addition to the cash awards, the final selection of films will be shown on April 3, 1981 during the 11th Annual USA Film Festival, March 27 - April 5, 1981 in Dallas.

## JUDGING

Films are judged on their originality in lighting, cinematography, concept, execution, script and use of new elements.

Films of a primarily didactic or instructional nature are not acceptable, nor are films specifically designed to promote a product unless they have other true entertainment or enrichment value.

A film will not be considered for competition if it uses non-cleared, copyrighted music or inserts from other, copyrighted films.

For entry forms or further information, write to:

THE USA FILM FESTIVAL • P.O. Box 3105, S.M.U. • Dallas, Texas 75275 • or call (214) 692-2979

Attend the 11th Annual USA Film Festival in Dallas March 27 - April 5, 1981

## COMPETITION PROCEDURE

All entries will be pre-screened by Short Film Selecting Critic Dr. Barbara Bryant and a screening panel of experts in the industry (Gina Blumenfeld, N.Y.; John Canemaker, N.Y.; Barbara Ortiz, Fla.; Charles Samu, N.Y.; Marjorie L. Sigley, England; Thom Tyson, Cal.). Their final selections will constitute the four hours of programming to be shown on the Festival's Short Film Day, April 3rd. A separate panel of industry experts will then screen the final selection of films to determine the recipients of cash awards.

## ELIGIBILITY

The USA Film Festival/Rockwell International Short Film Competition is open to all new 35mm and 16mm optical sound track films under 50 minutes and primarily USA-made in terms of cast and crew. Entry films may be submitted by the filmmaker, producer or distributor. All entries must have been completed since May 1, 1980.

# SCENIC FOG EFFECT FILTERS.

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construction. There is no electronics or gearing in them, so that reliability is enhanced and cost reduced. A "T" bar on the camera body operating through an internal clutch simply engages the take-up pulley on the magazine.

To obtain the quietest operation possible in this compact and lightweight camera, we utilized the same design technique as we had in the CP-16R camera. All of the drive motor system and transport mechanism are mounted on a center plate which is rigidly attached to the lens board. This whole assembly in turn is rubber shock-mounted inside the camera housing so that the camera housing will provide the maximum in self-blipping of camera noise. As a further effort to reduce noise at its source, the camera mechanism is completely belt-driven with the one exception of the right angle gear that drives the mirror-shutter.

These techniques make possible the achievement of an operating sound level, with film, in the mid 30 dB range as measured on the "A" weighted scale with the sound meter set one meter from the film plane.

We feel that field experience will prove that a camera operating at this sound level will be quite acceptable for most location filming applications where sync sound recording is required. Additional sound reduction could be achieved by external blimping and, as we gain further field experience, we will be examining this possibility.

A design goal was to achieve as portable and lightweight a package as possible. We feel that we have succeeded to the extent that the *complete* camera system with lens, 120m film load and on-board battery weighs approximately 11.5kg. The CP35 camera system with 120m magazine weighs approximately 8.5 kg.)

While a conventional manual follow-focus system will be available, we are proposing to feature with the CP35 the wireless control system developed for Steadicam to operate focus, iris, and zoom as required, with no physical connection between camera and camera assistant, and no practical limitation as to the distance between the two.

An optional feature with the CP35 will be a through-the-lens exposure metering system—the first time this feature will be available on a professional 35mm motion picture camera. We developed and perfected such a system for use with the CP-16R and GSMO cameras, and field experience has shown it to be extremely accurate and reliable. It uses a so-called "elliptical" weighting system, which means that the light readings are given diminishing emphasis as they proceed away from the center, but more so on the



vertical axis than on the horizontal axis. This reduces the variations in readings one would see in a pan shot, and minimizes the impact of a bright sky on overall scene readings. We are also offering single frame and/or reverse capabilities as optional features.

Naturally we have allowed for the ability to record time code on the film in the future, but we have not done so as yet because it is our feeling that an acceptable code that satisfies the needs of modern video editing has not yet been established.

To summarize, there are a number of excellent cameras for 35mm cinematography available today. The CP35, however, by providing all of the versatile and advanced features required for location filming coupled with a reasonably low sound level, should prove to be a unique and valuable contribution to the cinematographic art. ■

## CINEMA PRODUCTS' CP35 35MM CAMERA

### Preliminary Data

**MOVEMENT:** Cam driven dual-pin pulldown arm with dual-pin registration located in the standard Mitchell position. Two-axis stroke adjustment with eccentric controls for independent stroke length and entry position adjustment. Retractable register pins with manual and/or automatic pick-up. A manual advance knob is provided to facilitate threading. Standard aperture: .980" X .735" (full aperture on full aperture center line).

**SHUTTER:** Combination dual-opening reflex mirror with high-efficiency focal plane cup (required for use with high-speed lenses). Standard shutter fixed at 180 degrees (other openings optional). Internal circuitry stops the shutter automatically in the viewing position.

**VIEWFINDER:** Reflex viewing-focusing system with high magnification, and with high efficiency rotary mirror; extremely fine, interchangeable viewing screen. Normal or de-anamorphic optical compensation, standard. Built-in closure and two manually-introduced contrast viewing filters. Large pupil eyepiece with diopter adjustment and lock. Eyepiece rotation through 360 degrees provides erect image at all times. 1:1 extension system for tripod use. Auxiliary video viewing optional.

**LENSES:** The camera incorporates the standard BNC lens mount with anamorphic locating pin. Accepts all BNC reflex mounted lenses. Lens may be mounted on either full or academy center line. Lenses offered include the Canon aspheric prime lenses, Todd AO-35 high-speed anamorphic lenses, and professional 35mm zoom lenses (such as Angenieux, etc.).

**DRIVE MOTOR:** A completely self-contained crystal-controlled drive motor features two modes of operation: either 24 or 25 fps as the prime rate (with high/low fps range selection). This provides a total of 13 different switched speeds in each mode (ranging from 6 fps through 96 fps in the 24 fps mode, and

Continued on Page 1282

Angenieux Arriflex Arrivox Beaulieu Beyer Bolex Canon Cinema Products Colortran Eclair Electro-Voice Guillotine Magna-

# BRENNER CINE SOUND

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SSIII Body Only	\$ 295.00
Yoder Conversion w/12 to 120 Single System Magnetic Sound Systems and 400' Magazine	\$3,300.00
Auricon Conversion w/CP Crystal Drive System 400' Magazine and Angenieux 12 x 120 Lens w/7" Finder	\$2,450.00
Frezzi "Remanufactured" MC571DC	\$1,850.00
Bolex H16 EBM Body	\$1,500.00
Arri BL w/12 x 120 Lens, Matte Box 400' Mag. Motor	\$4,900.00
Arri Variable Speed Control	\$ 550.00
Arri 16S Blimp Metal	\$ 495.00
Arri 16S Blimp Fiberglass	\$ 990.00
Beaulieu 16mm w/12 x 120 Angenieux and accessories	\$ 1,650.00

### NEW SPECIALS

Oxberry Media Pro 16 complete w/Bolex SBM, 16x100mm Vario-Switar lens and accessories	\$ 10,300.00
Arriflex S/B body	\$ 6,200.00

### LENSES

Angenieux 5.9 Lens w/Shade Arri S MT.	\$1,100.00
Kinetal 25mm f2.0 Cooke Arri S MT.	\$ 350.00
Schneider 35mm f2.0 Cine Xenon Arri S MT.	\$ 350.00
Schneider 50mm f2.0 Cine Xenon Arri S MT.	\$ 325.00
Kinoptik 75mm f2.0 Apochromat Arri S MT.	\$ 300.00
Zeiss 85mm f2.0 Sonnar Arri S MT.	\$ 250.00
Scheider 100mm f2.0 Cine Xenon S MT.	\$ 500.00
Kinoptik 100mm f2.0 Apochromat S MT.	\$ 500.00
Kinoptik 150mm f2.5 Apochromat S MT.	\$ 600.00
Zeiss 10 to 100mm f2.8 in Arri BL MT.	\$2,950.00

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# LIGHTING DEVELOPMENTS EXHIBITED AT PHOTOKINA 1980



Based on a careful survey of the trends, this will perhaps be remembered as the year of arc lamps and plastic luminaires for photographic lighting

By **THOMAS M. LEMONS**

*TLA-Lighting Consultants Inc., Salem, Mass.*

The major lighting developments introduced at *PHOTOKINA '80* center on the introduction of new arc lamps and the use of plastics in luminaire housings. Beyond this there is the ability to dim arc lamps, such as the HMI, and use both HMI and CSI/CID lamps in the same luminaire. The arc lamp has thus become a major concern in photographic lighting and projection systems.

The HMI arc lamp was introduced eleven years ago by Osram for use in TV location lighting. It has slowly found its way into the film lighting market and with its acceptance has come a multitude of manufacturers of this source. Several years ago GEC, an English lamp manufacturer, became the first company to provide competition for Osram. During the past year, ILC, a California lamp manufacturer, joined the competition and now GEC, ILC and Philips offer a full line of HMI type lamps.

At *PHOTOKINA*, Sylvania added the 2500-watt lamp to their previously announced 572- and 1200-watt lamps. Since Mitsubishi had shown the HMI type lamp at a past *PHOTOKINA*, the competition within this market is now becoming brisk.

The CSI lamp was introduced by Thorn of England over 15 years ago as a projection lamp. About ten years ago it was incorporated into a PAR 64 reflector lamp for use in TV location lighting, especially for sports facilities. About two years ago, in the interest of improving the color of the CSI lamp, Thorn introduced the CID lamp. Since the CSI/CID lamps are of single-ended construction, they provide many advantages in their mounting and optical control capabilities. At *PHOTOKINA*, Thorn introduced a 2500-watt CID lamp with a Mogul Bipost (G 38) base and 5-inch LCL for direct use in 2Kw fresnel luminaires. This lamp, along with the 1000-watt open, as well as PAR 64 enclosed CID lamps, meet the color requirements of daylight film.

A CSI lamp of 185 watts was also introduced by Thorn. This lamp is being made with a two-pin prefocus (GY 9.5) base, as well as integrated into a reflector assembly for projection systems. The open lamp was being demonstrated in a battery-operated luminaire for remote TV applications. At *PHOTOKINA*, Kobold, Ryudensha, Arri, LTM, Lee, Blossl and Cima all had 200-watt battery operated

HMI systems which suggests good potential for this new Thorn CSI lamp.

In the projection lamp market not only was there a 185-watt Thorn CSI lamp with integral reflector, but also 250 and 400-watt Osram HTI lamps and a GE Gemini 300-watt lamp. These lamps have been developed for the 8mm and 16mm film projectors. The Gemini 300 is a direct replacement for the Marc 300 with a 25 percent efficacy increase. A French company, Hardware S.A.R.L., demonstrated a 575-watt HMI 35mm slide projector. Overhead projectors have also used the 575-watt HMI, 400- and 1000-watt CSI and 400-watt HCI lamps from Osram, Thorn and Philips. Philips also has a 400- and 1000-watt HPI lamp for episcopes. The use of arc lamps in projection systems is therefore expanding rapidly.

The introduction at *PHOTOKINA* by Philips of the 220-watt tin-halide short arc lamp provides another single-ended lamp with a two-pin prefocus (GY 9.5) base. They indicate that this lamp will be extended to 500- and 1000-watt types early next year. This lamp has minimum flicker and good daylight color which makes it very desirable for photographic applications. This lamp size and construction makes it almost a direct replacement for the FEL single ended tungsten-halogen lamp. The potential for this lamp is therefore very great and it can easily be incorporated into many existing systems.

With the development of electronic ballasts for arc lamps, there also exists the potential for dimming lamps. Osram has now evaluated this for the 200-watt battery operated systems and the CSEE of

**The GUN-LUX HMI 1200FL is a super-light daylight temperature floodlight. The light and ballast are made of high heat-resistant, high-impact plastic. The light has instant restart capability, even when hot, and can be restarted at either the light or the ballast. An aluminum carrying case for transporting both the light and the ballast is available.**



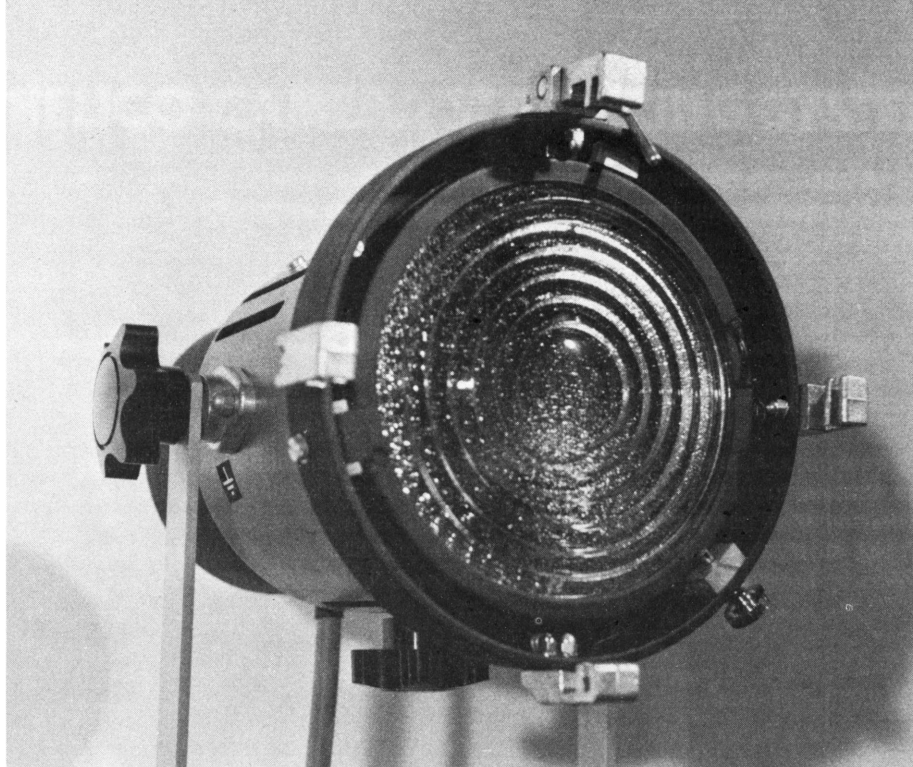


France 575- and 1200-watt electronic ballast. They now approve the operation of their HMI lamps on these ballasts and indicate that satisfactory performance will be obtained through a power range of plus ten and minus 25 percent. Where color quality is not of utmost importance, such as in TV applications, they find that the lamp wattage may be reduced to minus fifty percent. The CSEE ballast is also expected to be available for the 2500- and 4000-watt lamps as well as CSI and CID lamps. This eliminates the previous thought that arc lamps may not be dimmed.

Though not demonstrated at *PHOTOKINA*, another new arc lamp that must be noted is the 175 watt GE Multi-Vapor II lamp. This lamp has been developed for interior general illumination and it provides near perfect incandescent color quality. It has a 100-lumen-per-watt efficacy, a color temperature of 3100 K and a life of 1500 hours. This lamp provides many opportunities for use in fill lighting and it is the first incandescent quality arc lamp to come into the market. Its efficacy and life should make it of great interest where a general lighting system can provide base light in a film studio.

The use of plastic housings for studio luminaires should probably be attributed to Ianiro's lanebeam unit. They have now expanded the use of plastic housings to their Pulsar unit. Other companies making studio lights with plastic housings include Kobold, Ryudensha and Blossl. This includes units for the 200-, 575- and 1200-watt HMI lamps where the plastic housing provides improved electrical safety. Though the use of plastic for luminaire housings has not yet made a major impact into the market, the trend has started and should quickly expand. Since it provides increased electrical safety, especially for arc lamps, the use of arc lamps and plastic housings may be associated developments.

Several years ago Cremer introduced fresnel luminaires with interchangeable lamp assemblies for HMI and tungsten-halogen lamps. The new Ryudensha fresnel units also incorporate such an interchangeable feature. The latest development of this type was announced at *PHOTOKINA* by Ianiro and Lee. They have a fresnel unit with sockets for either the HMI or CID lamps. This interchangeability would make it possible for a rental house to provide either system without having to have two units in stock. There is also the potential for creating one ballast that would operate either of these lamps to achieve a totally interchangeable system. Such a system would provide a substantial saving when compared to the alternative of stocking two totally separate systems.

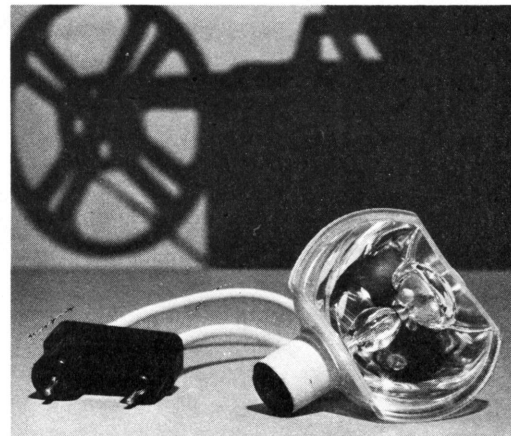


LTM's new 200W Fresnel lens LUXARC is a lightweight, very small light with HMI daylight output equivalent to that of a 1K incandescent light. It is the smallest daylight Fresnel unit in the industry and operates not only on mains or generator, but also on ordinary household current, which can be a distinct convenience in many location situations.



This 1KW CID lamp is only slightly longer than a pack of cigarettes. (BELOW RIGHT) Recently developed by General Electric, this Gemini 300 projection lamp provides more than twice the illumination in screen lumens of incandescent projection lamps, including those with 1000-watt ratings. The colors on the screen are also more vivid.

The photographic market is not known for its quickness to change. The great numbers of new arc lamps and the availability of lamps from a number of lamp manufacturers should overcome some unwillingness to change. The 1980 *PHOTOKINA* will perhaps be remembered as the year of arc lamps and plastic luminaires that lead to changes in the photographic lighting market. ■



# PERFECTONE CONTINUOUS MOTION HIGH-SPEED PROJECTOR "COMITOR 16 HS"



In this unique projector, with images being scanned continuously, a shutter is unnecessary and slow-speed optical flicker is eliminated

At PHOTOKINA '80 Perfectone presented its Continuous Motion High-Speed Projector COMITOR 16 HS. A unique continuous motion projector capable of large screen projection without limitation on level of illumination, the COMITOR 16 HS includes the following features:

- Optical compensation by high precision rotating and segmented mirror unit. Completely distortion free image. Complete absence of the optical and chromatic aberrations inevitably present in polygon or similar type of optical compensation systems.
- Extremely smooth propulsion of the film in the gate between 2 sprockets. Film tension across these sprockets and throughout is at an absolute minimum ensuring high speed running without possible damage to the perforations and eliminating any deterioration of the film even with continuous repetition.
- Speed of projection is 24 fps and 25 fps with control at synchronous speed by mains or other external control frequency.
- In projection mode—fixed speeds are available at 4 times normal forwards and reverse plus variable speed also at 4 times.
- In addition to above, variable speed is provided up to 750 frames a second, without picture, for fast spooling forwards and reverse.
- Very close control of tension of spooling under all conditions of running permits the use of plates and bobbins without the necessity of flanged spools.
- Combined optical and magnetic sound reproduction including a sound stabilising flywheel which is motor driven except when film is running forwards at normal speed. In this mode the flywheel is smoothly coupled to the sound drum thus ensuring very quick stabilisation and rapid start without strain on the film or possibility of scratching.
- Highly efficient Xenon illuminant of horizontal layout with metallic mirror system.
- Projection is possible at very slow speeds without reduction in screen brightness.
- Projection of an image at speeds below 4 frames a second or in stationary mode (at a reduced level of illumination) is assured by an automatic heat reducing shutter in the light path.

## Possibility of TV Image Simultaneously with Projection.

- As an optional facility, a compact Ikegami 3 tube colour TV camera can be built into the projector to provide a high quality TV image on a monitor in parallel with the projected picture.
- The optical splitting elements do not affect the quality of the projected image and result in only a very small reduction in illumination on the screen.

## Basic Principle

The film is scanned travelling in continuous mode with tension accurately maintained in the aperture gate by a combination of drive and feed sprockets with slight reverse or holdback tension. Optical compensation to arrest the continuous motion is accomplished by a compact and elegant rotating mirror wheel assembly located in the light path. An oscillating motion imparted to each mirror segment compensates precisely for the advance of each film frame.

## Technical Advantages

The vacuum surfaced coated mirrors are free from all optical aberrations thus allowing the use of a high luminosity system with lenses of large aperture.

Due to the fact that the images are scanned continuously, a shutter is unnecessary and optical flicker is eliminated even at very slow speeds of 2 to 3 fps.

A feature of the system is that standard projection lenses can be employed of focal lengths from 25mm to 75mm and with barrel diameter of 42.5mm.

The projector is equipped with a dual electronically controlled d. c. motor system functioning as follows:

- Forwards and reverse running at 24 fps or 25 fps synchronised to mains frequency or to other external frequency.
- Variable speed forwards and reverse from 0 to 100 fps with projection.
- Accelerated variable speed forwards and reverse up to 30 times normal speed without picture.

The main drive has 2 coupled pulse generators allowing the projector to assume the role of a master machine controlling in electronic synchronisation separate magnetic sound machines equipped with Rythm-O-Start or Rapimag synchronisation system.

The 50 hz generator is used when the

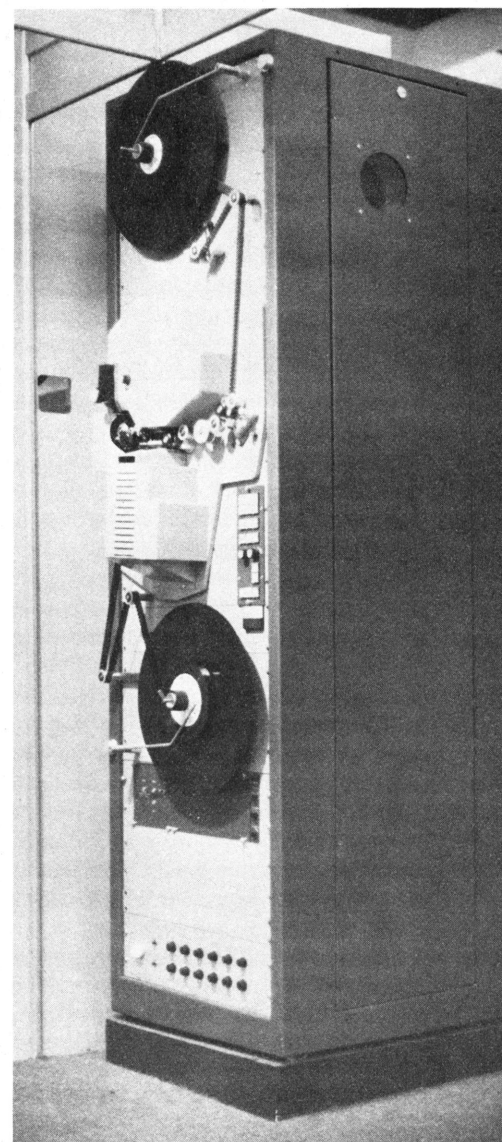
sepmag machines to be coupled in lock use the Rythm-O-Start synchronising system. The second generator having an output of 250 HZ (2 phase) furnishes the locking signal for the Rapimag system and range of machines.

## Television Colour Camera

The Comitor Type HS 30 which incorporates a TV colour camera caters for all types of users and fields of operation in both the normal cinema type of production work and combined TV and film

Continued on Page 1286

The versatile "Comitor 16 HS" projector runs at standard speeds of 24 fps or 25 fps, but fixed speeds are also available at four times normal forwards and reverse, plus variable speed also at four times normal.





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## EYE WITNESS REPORT

### Continued from Page 1233

ready have invested in the expensive hardware required for the other two systems, Aaton has developed data modulation compatible with SMPTE video time code and also EBU modulated equipment.

Who will win the Battle of the Time Codes nobody knows, but, to this writer, the Aaton people would seem to have a certain logic on their side.

On the Magnasync/Moviola stand I encounter a fascinating new piece of equipment known as the VIDEOLA. It represents a unique concept in film-to-tape transfer. It employs "the remarkable FLICKERLESS PRISM™ optics to give you performance and flexibility not available in any other system . . . at any price."

Amazingly, the VIDEOLA has the ability to vary film speed from still-frame to six or ten-times sound speed without regard for TV synchronization and has interchangeable 16mm and 35mm transports. As a bonus, it offers the features and flexibility of a Moviola film editor and the capacity for 3000-foot film reels.

I look in on the MOVIECAM stand to see whether any significant modifications have been made since we last reported this "space-age" camera. I learn that there have been several changes worth mentioning. For one thing, plastic covers for the main operating controls have been added to keep them from being tripped accidentally. Also, there is a new buckle switch system that prevents the camera from forming too large a loop at the top or bottom. An inoperative take-up motor will also activate the buckle switch.

The production model of the MOVIE-

CAM 1000-foot magazine is now available, as is a small throat adaptor for top mounting either the 500-foot or 1000-foot magazine. A long viewfinder with a large opening and excellent light transmission is available and a viewfinder system that can rotate the image for more comfortable viewing is in the final stages of development.

On the video side, there is a new small unit to be attached to the camera—a video transmitter with a range of 30 to 40 meters. A combination follow-focus system for zoom or prime lenses is available.

On the Rosco stand I see a demonstration of their new CYCSCREEN, described as "a reasonably priced cyc material specially suited for television use."

Rosco's CYCSCREEN is a durable, flame-retardant plastic screen material that is equally adaptable to front or rear lighting—or both. Perhaps the major advantage of the material is that it eliminates the scalloped effect usually seen when lights are close to the cyc. This new material permits lighting equipment to be positioned very close to the cyc and still assume a smooth even field.

I stop by at the stand of the China National Instruments Corporation, representing the Peoples Republic of China, where several interesting motion picture cameras and projectors are on display. If I am correct, this is the first time that Chinese motion picture equipment has been displayed at *PHOTOKINA*.

For those who, like myself, feel that the Super-16 format offers a viable alternative for low budget feature production, a most interesting item on the Rank Taylor Hobson stand is the new Cooke Varokinetal Super-16 zoom lens. A T/2.8 lens with a range of 10.4mm-52mm, it has a

maximum angle of 60° at the wide end of the focal range. The manufacturer claims that it offers the same high quality in optical performance as the standard 16mm Cooke Varokinetal zoom lens—which, in turn, is said to be comparable in optical quality to the Zeiss Distagon or Taylor Hobson Kinetar range of prime, fixed-focal-length lenses.

I stop by for a brew at the colorful bailiwick of Lee Enterprises Ltd. Built and decorated like a Montmartre *bistro* on the outside, it is strictly English pub on the inside and a favorite meeting place for the jollier types, including the irrepressible Lee Brothers themselves, John and Bennie.

Back to business, I explore the Steenbeck stand where there is a handsome array of brand new and newly modified editing equipment on display. I am especially impressed with the new Model 721 8-plate unit with twin viewing screens in the anamorphic format.

The John Barry Group of Australia features a number of interesting items, including a series of new fluid heads made by Universal Fluid Heads, a range of light stands by Manfrotto and a new Triaut Center Lift Aluminum Tripod and Multi-purpose Dolly. However, the item which I find most intriguing on the stand is the new Barry Pack 4/30, which is a combination battery and charger in one lightweight package. It incorporates all of the advanced features of both the Barry Chargers and the Barry Packs.

Another interesting item, this time on the Continental Camera stand, is the new Sea-Cam Series 1000 Underwater Camera Housing. Constructed of aluminum, it weighs approximately 8 ozs. underwater. Because the unique video viewfinder is





Sony TC-D5 cassette recorder which has not been confined to use in Super 8mm productions but has also been used extensively in 16mm and 35mm production. I should add that Super8 Sound, Inc. will be doing a similar conversion on the Sony TC-D5M (a metal tape version of the TC-D5) whose specs exceed my old Nagra III, in a 3 lb, 2 oz package.

Many other systems were shown but most were incompatible with professional standards or would only interface with select equipment, with the one exception of Broker which showed a full-coat recorder similar to the Super8 Sound, Inc. recorder.

## EDITING

The French SFAT vertical editing and post-production consoles which combine Super 8mm and 16mm interchangeability with sound mixing and recording were an exciting addition to the show. They should be making an appearance in the States in early 1981. Super8 Sound, Inc., showed their motorized editing bench which has become the standard bench of the few of us who use Super-8 professionally.

Too numerous to mention were the dozens of video editing systems which are making a very real impact with Super 8mm producers in the professional sector.

## SUPPORT

Many companies have developed quite an assortment of support equipment which have shown a serious intent to make professional Super-8 production a reality.

## EWA

Ewa has expanded its line of equipment with the addition of an improved matte box and several barneys and blimps for popular Super-8 cameras, along with their environmental housings.

## SACHTLER

Sachtler has introduced a carbon graphite tripod and fluid head combo expressly for the Super-8 market. This tripod is combined in a package along with a rubber triangle and case at an extremely attractive price.

## CAMERAS

Keeping the best for last has not been easy, for many new cameras have popped up at *Photokina* along with some old standbys, with new twists.

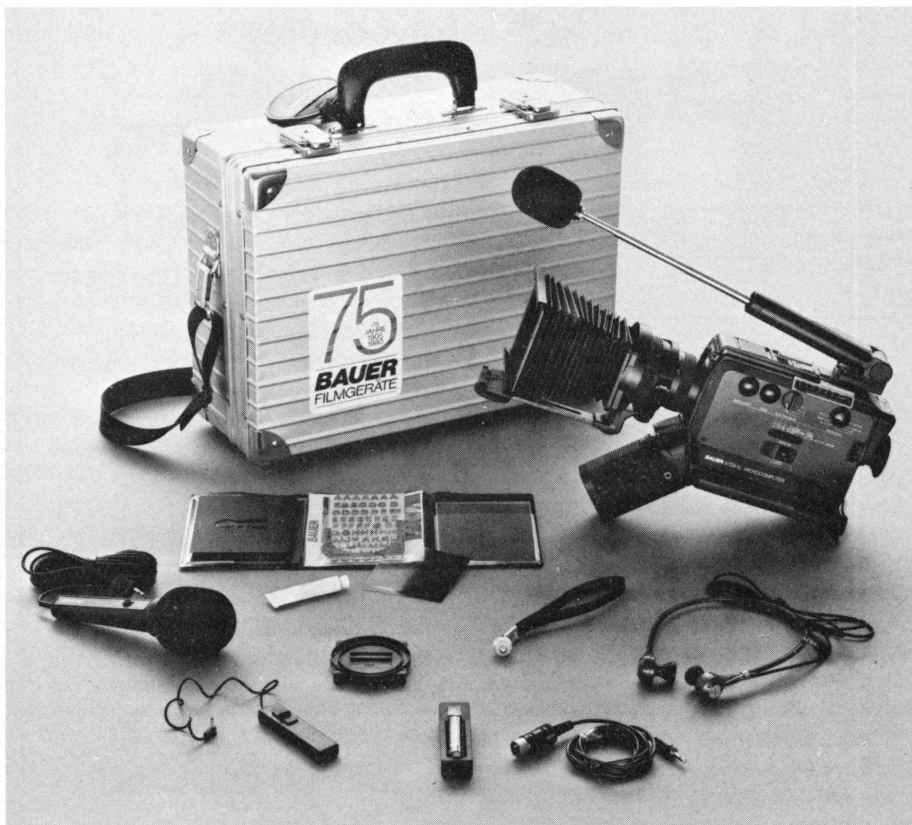
## BEAULIEU

The big news was the Nizo 6080. A superb camera with a 7mm-80mm, f/1.2 lens which accepts the 200-foot Kodak

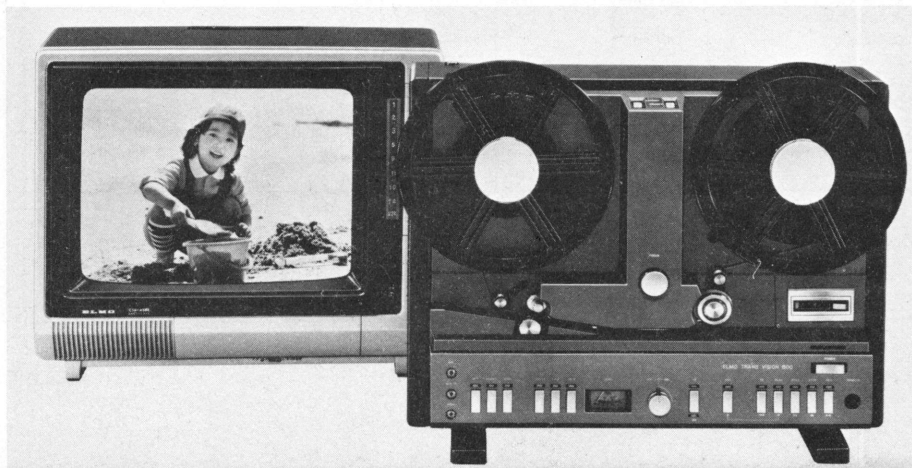
Continued on Page 1295



The Bauer C109XL camera boasts a 6mm-51mm f/1.2 zoom lens, and is quite sophisticated, considering its low price. (BELOW) The Bauer S615XL Microcomputer camera is being marketed in a profi-kit, including case, matte box and many other accessories. Crystal conversion is available from Super8 Sound, Inc.



At *PHOTOKINA '80* there was a prototype preview of the new Elmo Trans Vision 600 transfer machine, which is extremely simple to operate and produces an excellent transfer. In the way of telecines, Orytec, Sony and Grundig all showed excellent machines, some of which should be on the market currently.



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### THE NEW CP-35 CAMERA Continued from Page 1271

from 6¼ fps through 100 fps in the 25 fps mode). As an accessory, the camera can be provided with an auxiliary, continuously variable speed control that provides a range of 6 to 100 fps. Three "out-of-sync" warnings are provided: one audible (with volume control) and two visual, one in the viewfinder and one on the camera control panel. All camera control circuitry is internal to the camera, modular in design, and easily removed for service and calibration.

**POWER:** The entire camera system operates from a power source of 12 to 32 VDC. (A power source of 24 to 32 volts is required for 64 to 100 fps operation.) Various battery packs and chargers are available as standard accessories. A unique feature is the availability of an "on-board" battery (which provides 1200 feet of filming at 24 or 25 fps), making the camera completely self-contained for hand-held operation. Battery condition indicators are provided via a low battery light in the viewfinder and a battery condition meter located on the control panel.

**MAGAZINES:** Two CP35 "quad" (quick acting displacement) magazines are available, one 500-foot capacity and one 1000-foot capacity. Both magazines feature steel toe and heel plates (for minimum wear), ultra lightweight housing, single-latch removable cover, footage remaining indicator, anti-spill brake on the supply spindle and easily cleaned velvet light trap rollers. Both magazines are installed on the camera via a positive locking, snap-action latch mechanism.

**WEIGHT:** The CP35 camera system, with 500-foot magazine, weighs 19 pounds approximately. The camera system, complete with 500-foot magazine, full film load, prime lens and on-board battery, weighs approximately 25 pounds.

**ADDITIONAL FEATURES:** Servo-type wireless and/or cable-operated focus, iris and zoom controls with interchangeable calibration rings. Lightweight swing-away matte box. Camera level and LED illuminated footage counter with long term memory (reading in feet or meters) are standard features. The CP35 also features unitized construction, modern appearance, baked epoxy finish, and human engineering detail.

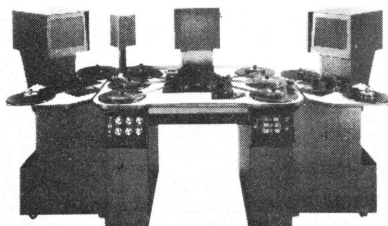
**ACCESSORIES:** A wide range of viewing screen combinations, matte boxes, filters, lens control systems, batteries, chargers, lenses, interchangeable aperture plates, carrying cases, video-assist cameras and LED viewfinder exposure meter are all available. Single frame and/or reverse running capabilities are also available options. ■

### NAGRA 80-BIT TIME CODE Continued from Page 1279

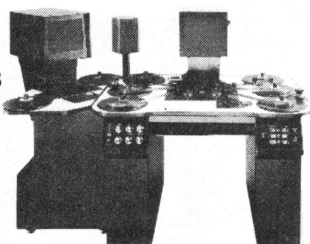
static stabilizer. (Consumption is nil at 25° C. For lower temperatures approx. 30 mW/10°.)

#### 5.3 Master clock for time setting

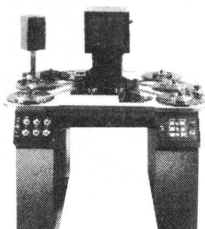
This unit permits time setting of the Nagra generator, as well as that of the video recorder, but also of the movie camera generators using the EBU/IRT



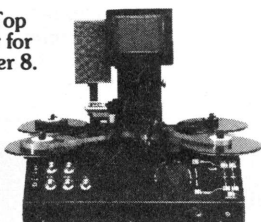
**Model 6-10**  
10 Plate Editing System  
List Price: \$20,800



**Model 6-8**  
8 Plate Editing System  
List Price: \$16,400



**Model 622**  
6 Plate Console Editor  
List Price: \$11,400



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standard. It includes a playback decoder to check the generators and a frequency/phase comparator for occasional quartz drift calibration.

#### 5.4 SMPTE/EBU 80 to EBU 4 bit translator

This device is placed between the playback unit of the audio tape bearing 80 bit time code and the recorder taking the perforated magnetic film on which the EBU 4 bit code will be recorded.

#### 5.5 Nagra T-A with time code synchronizer

This machine synchronizes itself on the time code signal it receives by comparing it with the signal it is reading and by taking all necessary measures to make both time codes synchronous.

When linking it to a video playback unit for instance it supplies the sound corresponding to the image from the video machine but with the full quality spectrum of the audio tape. ■

### THE NEW FEATHERCAM CM35 CAMERA

Continued from Page 1241

Much innovative design work is embodied in Feathercam CM35 and the result is a lightweight, full-featured camera that can adequately cope with the stringent demands of the industry.

A wide range of accessories will shortly be available to extend the performance and application of the camera to meet whatever reasonable demands are made on it.

#### FEATHERCAM CM 35 SPECIFICATIONS

**Format:** 35mm reflex

**Motor:** 4 to 48 F.P.S. (Later models to 96 F.P.S.); 24 or 25 F.P.S. crystal

**Shutter:** Rotating mirror remains open when stopped

**Dimensions:** 4" wide, 7" high, 12" long with 500' magazine

**Weight:** Approx. 7 lbs. with 500' magazine and viewfinder

**Movement:** Double pin registration, four claw pull down

**Film Gate:** 6" long for steadiness

**Power:** 24V Battery Ni-Cad

**Lens Mount:** B.N.C.R. or Arri Bayonet or other

**Magazine:** 500' co-axial snap on type, no threading 1000' at later date

**Aperture Gate:** Full screen aperture (silent) 0.980 by 0.735 inches

**Viewfinder:** 2 position, right-left

**Video:** Cin-Vid video monitoring available

**Lens:** Any B.N.C. mount or Arri mount lens; Others to follow

**Footage Counter:** L.E.D. readout with memory

**F.P.S.:** L.E.D. readout

**Carrying Handle:** Top of camera

**Operating Handle:** Removable with remote on/off switch

**Construction:** Magnesium

**Video:** 30 frame crystal for videography optional

For further information, contact: Continental Camera Systems, Inc.; 7240 Valjean Avenue; Van Nuys, CA 91406; (213) 989-5222. ■

# THE ARRI ENERGY SET:

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A compact, lightweight 4AH battery that works with *any* 12VDC camera.

**T**his battery and charger *cooperate* to form the most infallible DC power unit you can buy. For example:

#### The memory problem.

To avoid building a false capacity "memory" into the nicad cells, a partially discharged battery should be trickle-charged. But most chargers are designed to deliver a fast charge, because trickle-charging a flat battery would take sixteen hours or more.

#### Automatic sensor.

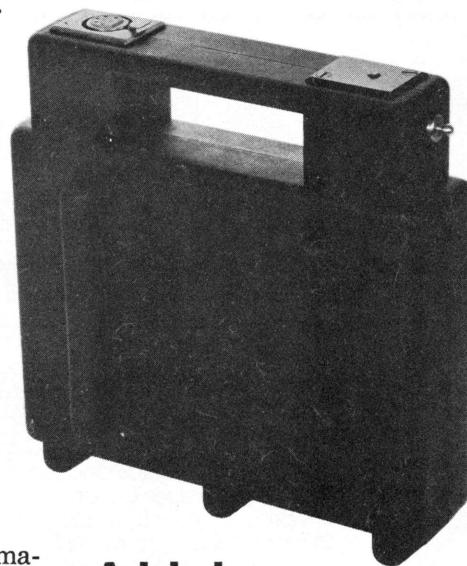
The Energy Set's charger automatically senses the degree of discharge in the battery and gives it the appropriate rate of charge. No danger of creating a false "memory." *You just plug the battery in and forget it.*

#### No overcharge.

A thermal sensor in the charger also protects against overcharging. And the charger automatically switches to work with 110V/60Hz or 220V/50Hz AC. A red light shows that it's delivering a fast charge; red and green lights indicate a trickle charge.

#### Portable three ways.

You can carry the battery three ways. It comes with a shoulder-strap that snaps on. And a handgrip and belt loops are built into the case.

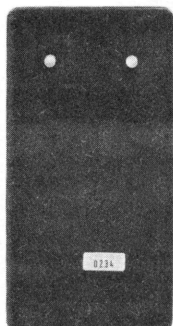


**A high capacity battery that weighs only 5 lbs. 1 oz. and measures 7½ x 7⅓ x 2⅓ ins.**

At 68°F, under typical shooting conditions, the Energy Set battery will drive 6,500 feet of film through the 16SR, 6,000 feet through the 35BL and 4,500 feet through the 16BL or the 16S/B.

#### Fuse protection.

A resettable circuit-breaker fuse automatically protects the camera's electric circuits against external shorts.



Charger weighs 2 lbs. 11 oz. and is 5½ inches high.

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A projector is no better than its lens. And there is no better lens for a 16mm projector, regardless of light source, than a Cinelux-Xenon 16MC by Schneider Isco. The fact is, Cinelux is the most cost effective way to produce better images. Even through inexpensive projectors.

You'll want a Cinelux-Xenon 16MC for the same reasons as the people at MGM, Universal Studios and the National Film Board of Canada: no other lens gets more out of a piece of film. Compare it to any other 16mm projection lens and Schneider's superior resolution, increased sharpness edge-to-edge, superb contrast and tremendous color saturation become immediately apparent.

But you should expect that from the world's only multi-coated 16mm projection lens, the Schneider Isco Cinelux-Xenon 16MC. It shares the same advanced optical design, computer technology, rare earth glasses and old world pride of craftsmanship as the lens that won an Academy Award for Technical Achievement.

When you can't afford anything less than the most the film has to offer, you can't afford anything less than a Cinelux-Xenon 16MC.

## Cinelux-Xenon 16MC

PROJECTION LENSES BY ISCO

Distributed in the United States and Canada by  
Schneider Corp. of America  
185 Willis Avenue, Mineola, N.Y. 11501



### THE VIDEO LA V-1000 Continued from Page 1252

results in low wow and flutter. Sound head in line with picture. Manual inching provided. 16mm and 35mm transports, both picture and sound, are interchangeable.

**Film Capacity:** 2,000-ft. (610m) on lab core or 3,000-ft. (915m) standard projection reel.

**Film Speed:** Crystal-controlled sound speed forward 24 or 25 frames per second,  $\pm .01\%$  ( $\pm .0024$  fps). Push-button switch-activated variable speed from less than two fps to six times (35mm) or ten times sound speed (16mm) in both forward and reverse directions. Controlled acceleration and deceleration for gentle film handling. Interlock mode to external source. Digital displayed film speed.

**Torque System:** Switch-selectable automatic or manual turn on/off for each supply or takeup torque motor. Motor torque controlled via tension-sensing idler arm system.

**Audio System:** Built-in control and mixing facilities for four audio tracks including composite optical or magnetic. Output: 15 Watts RMS, 8 Ohms. 600 Ohm balanced transformer-isolated output for each track and 2,000 Ohm quasi line output also provided. Headphone output automatically disconnects external speakers.

**Controls:** All controls conveniently placed for minimum lost motion. PICTURE and SOUND manual INCHING buttons located on respective transport.

**Control Panel:** Power ON-OFF. PROJECTION LAMP switch. LOCK switch for sound transport. Selectable 24/25 fps. SOUND SPEED switch for both transports. PICTURE MASTER SOUND SPEED switch for sound speed and stop from sound speed. Pushbutton controls for variable speed forward/reverse direction. PICTURE MASTER LOCK switch for interlock slave operation. PICTURE MASTER pushbutton control for variable speed forward/reverse. Electronic advance/retard control for each transport.

**Audio Panel:** Composite optical/mag level control. Magnetic level controls #1, #2, #3. Master audio level control. Exciter lamp switch. Servo iris control.

**Input Panel:** Line fuses, two each 10 amp, 3 AG type for 120 VAC. Interlock remote input plug for slave operation. Interlock remote output jack for master operation. Speaker output. A&B wind selector switch for each torque motor.

**Electronics:** Power supply and electronics in removable chassis/card cage, mounted on pedestal base.

**Optical Response:** 50-7000 Hz  $\pm$  3dB, SMPTE standard.



**Magnetic Response:** 50-10,000 Hz  $\pm$  3dB, SMPTE or DIN standards.

**Wow and Flutter:** Less than .1% RMS or DIN weighted.

**Resolution:** 16mm, 6MHz; 35mm, 8.5MHz.

**Gamma:** Video system limited.

**Density Control:** Manual and automatic.

**Film Color Correction:** Variable color temperature light source available.

**Projection Aperture:** Variable on monitor screen; selectable by adjustment.

**Transfer Capability:** 2 fps to 150 fps (35mm), to 250 fps (16mm), forward and reverse without flicker or jitter.

**Picture Steadiness:** Typical 0.1%, vertical and horizontal.

**Corner Illumination:** Within -5% center illumination for standard TV film aperture.

**Input Voltage:** 115/230 VAC, 50 or 60 Hz.

**Input Power:** 1200 watts, typical maximum.

**Dimensions:**

(console w/legs and optical transport system)

Height ..... 36.25" (921mm)

Width ..... 62.75" (1594mm)

Depth ..... 37.36" (949mm)

Table tilts 75° to pass through 28" doorway.

**Weight:**

Net, uncrated ..... 390 lbs (175 kg)

**Options Available at Time of Delivery:**

16mm or 35mm transports

SMPTE or DIN equalization

Edge or center track (16mm)

3-track magnetic head (35mm)

Variable color temperature light source

**Accessories:**

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External Speakers

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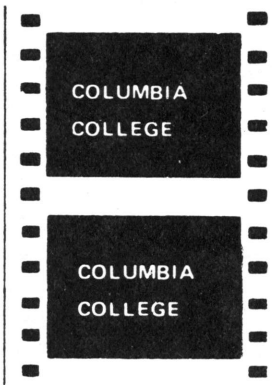
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# ARRI DIRECTOR'S FINDER

- OR SHOULD IT BE "DIRECTOR OF PHOTOGRAPHY'S FINDER"?

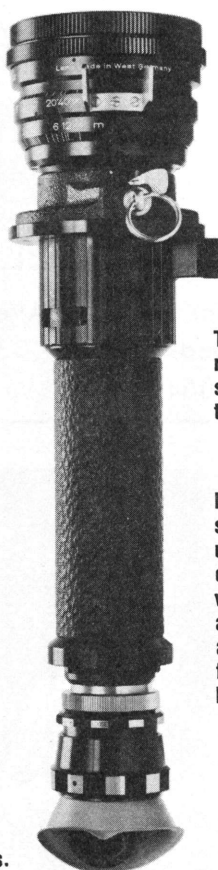
Lets you check out the next shot with exactly the same lens you'll use on the camera.

Same bayonet lens mount cavity as on camera. Accepts all ARRI mount lenses.

Slot accepts any of six ARRI 35mm groundglasses from 35-2C or Type 3. Rotating light trap and dust cover.

Finder is 10½ ins. long (without lens); weighs 1 lb. 9 oz.

Flange focal distance is same as on camera. Same eye relief and brightness.



Two split rings for neck strap; and tripod socket.

Eyepiece is same as used on ARRI cameras, with diopter adjustment and receptacle for corrective lenses.

If you want to see *exactly* what you'll get, there's nothing like looking through the taking lens. (Close up or at T1.2, it's especially critical, of course.) You can see both the coverage of that individual lens and the aspect ratio marked on the groundglass. You can see perspective. You can focus, and stop down to check depth of field.

Now you can do all that while the camera is being reloaded or having its gate checked. With a tool that weighs 1 lb. 9 oz.

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## PERFECTONE HIGH-SPEED "COMITOR 16 HS"

Continued from Page 1274

type operations.

In a dubbing system for instance the user has the choice of using either a projected large picture or a TV picture on a monitor for mixing coupled with a choice between the 2 methods of presentation of the completed film for review and comment.

### Construction

The projector is formed using a standard type 19" rack and designed so that the projection element can be tilted 5 degrees above and 10 degrees below the horizontal for centering of the picture on the screen.

The complete drive system employs 4 d. c. motors each with an individual electronic control system.

The principal motor drives the mirror scanning wheel and the film sprockets etc. in synchronous mode and up to 4 times normal speed. It is controlled electronically by a phase and voltage comparator. In high speed up to 30 times the mirror wheel is disconnected and the main motor stopped and the film driving elements are driven by an auxiliary motor.

Film spooling is achieved by 2 identical motors similar to those used in the magnetic sound machines.

Constant tension on the film ensures completely satisfactory spooling in either direction of running and at any speed.

Control of torque is by roller arms resting on the film spools and coupled to potentiometers giving information to the associated electronic control system.

The film plate and bobbin assembly has a capacity of 1200 metres and as a result of the very precise control of tension the use of film flanged spools is unnecessary.

A Xenon illuminant is employed which is free from ozone emission and which is mounted horizontally. In addition to the advantages of high reliability and long life resulting in low running costs, the colour temperature of the screen image produced from Xenon is in accordance with European recommended TV standards. Alternative illuminants of 700 W, 1000 W or 1600 W can be fitted without change of overall dimensions. The complete lamphouse assembly comprising the Xenon unit itself, the aspheric mirror unit, and the ventilation system is all incorporated in the rack together with the control elements. The rectifier unit must be external.

The heating effect of the infra-red components in the light beam is eliminated by the characteristics of the mirror

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system employed together with the forced ventilation system acting on the film scanning section.

Very slow running of the film is possible without any possibility of damage by heat to the base or emulsion.

Optical and magnetic combined sound scanning is designed with standard sound to picture spacing and with automatic disengaging motor driven flywheel.

Standard Perfectone sound and power unit cassettes are used all mounted in standard bay mounting case and are as follows:

- 24 V power supply,
- stabilized sound exciter lamp supply 4 V 1 amp.,
- pre-amplifier for optical and magnetic combined sound with + 6 db output.

All the film running controls and the modulation controls are grouped together on a single panel of vertical formation.

The film running controls comprise illuminated push buttons which actuate logic selection with integrated circuitry. Modulation controls are by push buttons with associated relays.

The main power supply required for the projector is 220 V or 240 V single phase 50 or 60 cps.

A 3 phase supply may be necessary for the Xenon rectifier according to the type used.

In the projector equipped with a TV scanning facility the camera is mounted inside the main cabinet rack on the rear of the main film driving assembly plate. Access to the camera is possible through the side door of the cabinet at the front and also from the rear. A mirror and prism deflection system diverts a very small percentage of the light in the main projection path to the TV camera. Adjustment of the light level fed to the TV camera is possible by provision of filter selection wheel positioned in the light path. The camera control unit which comprises a 19" panel assembly is positioned in the front of the projector for easy access to the camera setting up controls. The TV camera used is the Ikegami Type CTC 2400.

#### Dimensions

Height:	191 cms
Width:	56 cms
Depth:	67 cms
Weight:	approx. 160 kg

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- Weight — .852 kg (1 lb 14 oz)
- Length — 160 mm (6 3/8 in); depth — 80 mm (3 3/16 in); height — 55 mm (2 3/16 in)



Optional: microphone phantom powering; bass cut; external power from recorder.

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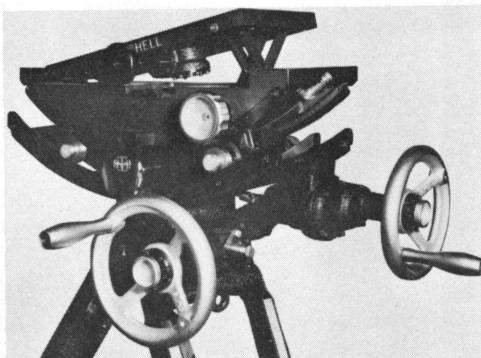
## NEW—FROM MITCHELL!

### Mitchell MK-II/S35R Orientable Finder

The new Orientable Finder permits viewing through a complete 180° arc from straight up to straight down. The same brilliant viewing image of the original MKII/S35R system is retained, and image remains erect regardless of finder orientation. Eyepiece-to-camera spacing allows comfortable left or right eye viewing. The Orientable Finder is built into its own door for quick conversion, and incorporates both of the standard MKII/S35R Viewing Filters.



### Mitchell Lightweight Geared Head



Incorporating all of the features desired by professional cinematographers, the new Mitchell Lightweight Geared Head is built to the same exacting standards that have made Mitchell Cameras world renowned for the past 60 years. Tipping the scales at only 44 pounds, the head features three pan and tilt speeds (Gear ratios of 1:1-1.5:1-3:1). The head also has a built-in lift plate which permits a maximum tilt of 60° without the need for wedges.

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## AATON CLEAR TIME CODE RECORDING SYSTEM Continued from Page 1239

transcoder can supply EBU or SMPTE code. The former allows those who have invested in Steenbeck decoding equipment, for example, to continue along the lines they have set out on; the latter provides those shooting double system video\* with versatility and better quality sound.

Nearly all transfer bays used in Europe today are equipped with edge track heads, necessary for the transcoding operation. The addition of the edge track facility to a transfer bay is a minor operation, and costs in the area of 1000 F.

### Printer

**Adage 4B**, the Aaton basic printing-table, reads the F & W signal on the 16mm tape, and **prints the time information in clear arabic figures and letters on the back**. From then on, **each second of sound track contains its own visible and autonomous time address** which can be matched to the corresponding time address exposed onto the film edge.

## Multi-Camera & Feature Production

The future of multi-camera feature production as proposed by Aaton consists in the following trio: **Event Memory** for cameras and sound recorders, **Scribe data distributor and collector**, and **Trans Message** for programmable transfer from 1/4" to 16mm tape.

*These machines have no equivalent in the industry today, and carry out functions which to date have remained untouched by electronics technology: the work of the script person, and that of the film editor as concerns automatic cataloging of multi-camera sync takes.*

### Event Memory

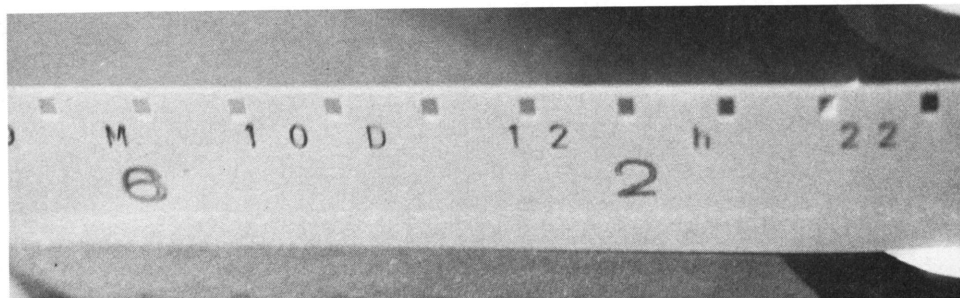
Contained in Option T2 of the Aaton 7 LTR camera (and in the Pilotime sound recorder circuit) the microprocessor run **Event Memory stores the time addresses of each time the camera starts and stops**, as well as other parameters concerning the take (e.g. lens diaphragm, etc.) At the end of each filming day, this information is retrieved by the Scribe, via ASCII language.

### Scribe

*The Scribe is at the heart of the Aaton*



The Aaton Printing Table reads the edge track of perforated 16mm tape and prints letters and figures on the backing. These correspond to the message and time address signals laid down by the transcoder. (BELOW) Printing is accomplished by means of a modified high-speed daisy wheel and a specially developed Aaton transfer ribbon designed to dry in a few seconds on Polyester base.





Clear Time Recording system, the link between the various elements of the chain. The script person's work is enormously facilitated; the film director can pre-edit with pinpoint precision; the laboratory can make workprints eliminating all NG takes; post production can de-rush with ease and accuracy; the film editor knows what he is handling at a glance. Because Scribe, a sort of friendly go-between, converses with the various machines on location and during post production.

Scribe functions as a **script notebook**: during the day, the script person can introduce comments on Scribe's keyboard, such as "Scene 35 Take 4, overexposed, take OK" (or NG); these comments are automatically time indexed.

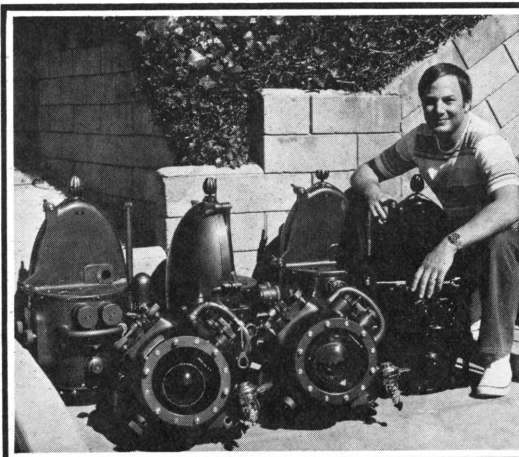
At the end of each filming day, Scribe retrieves from the various cameras and sound recorders the data contained in their respective Event Memories. It stores this information as long as necessary to transmit it to another medium. Then Scribe correlates all the data it contains (retrieval from cameras or direct keyboard entry) and transmits it in any one of a number of ways to another medium. Scribe can be connected to a standard line printer, providing a **daily printout**. As well as this, it can transfer the information by telephone modem to the transcoder's mass memory (Trans M) in the laboratory for later use; or if the laboratory is farther than a phone call away, Scribe can relay the information to a bubble memory (NEC) or even to the sound track of an ordinary tape cassette (e.g. Philips or Sony) which will be sent to the laboratory, or delivered with the exposed film.

#### Trans Message

This machine, in fact a **computer**, has two basic elements: a mass memory (for example a floppy disc) and a central processing unit (DEC PDP11) installed in the film laboratory. It receives information from Scribe either directly, or indirectly. It is here that the introduction of the specific production number into each time address is put to full advantage: **Trans M assembles in a single register of its memory everything concerning a given production number.**

Thus, as the information trickles in, by

*\*In order to have increased flexibility with post production sound (multiple tracks, track shifts, etc.) in video production, the sound from the video is often dubbed onto 16mm magnetic tape, and the sound tracks are assembled film style for mixing. Taking the sound on 1/4" on location saves one generation, allows ambience tracks to be recorded by the sound department, and generally improves the sound quality often lacking in video in the past.*



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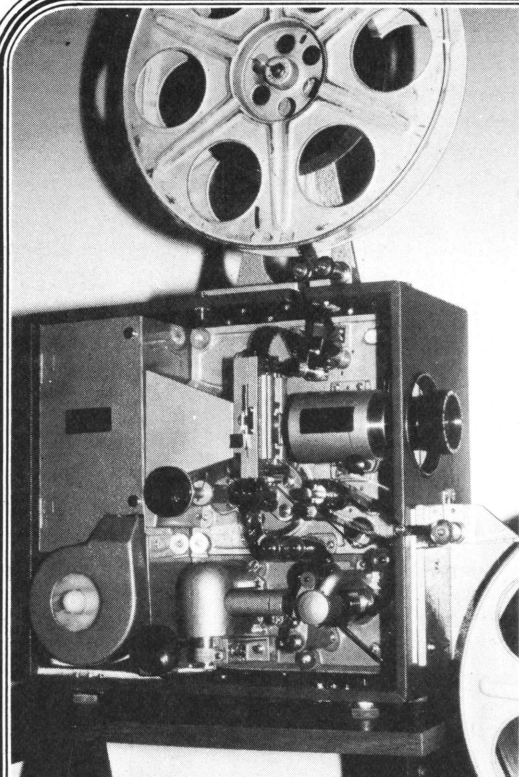
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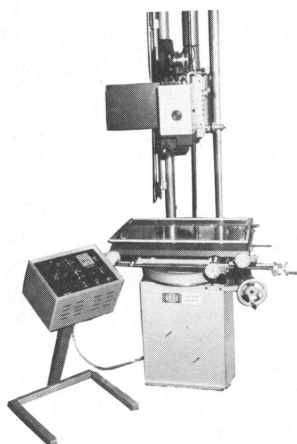
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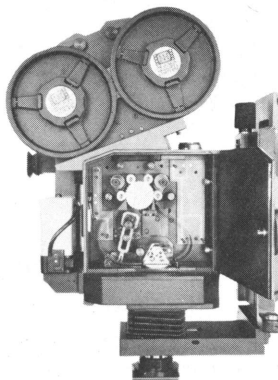
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telephone every evening or night, it is classified in the mass memory, and Trans M before it even receives the 1/4" tape of production, say, 84 for transfer to 16mm, knows that camera number 3 ran from 10h 45m 35s to 10:47 40, the take was called Scene 35 Take 4, and the director felt the take was no good; that scene 35 Take 5 was shot on camera 3 from 11:05 36 to 11:07 40, and that the take was "OK". When Trans M is called upon to transcode the 1/4" tape corresponding to production 84 the next day, or even a month later, it will "recognize" production 84, and will interpolate the information it contains regarding this production with the straightforward time address each second. Then **Trans M sends all this information** (in F & W signals) to the **16mm transfer bay**.

### Adage 4SP

This printing table "reads" the F & W signals (220 bits = words, 80 bits = figures) on the 16mm magnetic tape, and **prints** the corresponding information in **figures and words** on the polyester backing. It can be **programmed** to print: —everything: all time addresses and take information in words, including NG takes,

—only the sequences marked OK (eliminating NGs and takes when no camera was running),

—only the time addresses in figures, with no take information in words.

With the information printed in figures and words on the 16mm tape, the film editor is at last delivered from not knowing with absolute accuracy at a glance which reel corresponds to which sound take. And with the fact that Adage 4SP can instruct the film-optical-printer to make workprints only of the OK takes, not only is the **editor's work facilitated**, but **processing costs and viewing time are economized as well**.

*In conclusion, Clear Time Recording economizes time and film during production; it facilitates postproduction, and leaves each creator along the line from director, cameraman, through script person and film editor with the peace of mind necessary to devote all their creativity to the task of making a film. ■*

### SYNC BEEPS

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**NEW ITEMS FROM  
LOWEL-LIGHT AT PHOTOKINA**  
Continued from Page 1245

bright, not very even beam, is intended primarily for bounce illumination.

Though not a substitute for large reflectors (Variflector II) it is ideal for automobile interiors, product shots, close-ups, etc. It can provide fill, rim or accent illumination. When reflecting a light source already in use, it provides additional illumination without additional amperage.

The Lowel Lightflector measures 15"x24"x3/8", (39x61x1cm) and weighs just under 2 pounds (.82kg) with its Total-tilter.

#### Lowel Roll-up Carrier

The new Lowel Roll-up carrier is an efficient way of transporting a lot of equipment to location with a minimum of bulk and weight. It is made of heavy duty, reinforced canvas with straps to secure it and to "sling" it over-the-shoulder. Four large pockets hold up to eight Lowel Omni-stands or the following, typical combination of equipment: 2 large Link stands; 4 Omni-stands; 2 half poles, 2 reflector umbrellas; and 1 tube of large gel sheets. When the Roll-up carrier is open, its contents are instantly accessible; when empty, it occupies very little space.

#### Lowel Screw-in Stud

The Lowel Screw-in Stud is a new mounting device for attaching lightweight lights, small reflectors, and related location equipment, to flat wooden surfaces, thick beams, trees and other wooden objects, where the use of a clamping device is impractical or undesirable, and the hole left by the stud is of no consequence. The compact assembly has a standard 5/8" (16mm) diameter stud with safety undercut on one end, and a 3/4" (19mm) long screw on the other. Threading the screw end in or out of a mounting surface is facilitated through the use of a hole, cross-drilled through the Stud. A small screwdriver, inserted in this hole, provides the leverage to fully seat or remove the Stud, quickly and easily.

The Lowel Screw-in Stud was field tested at the XIIIth Winter Olympic Games in Lake Placid, where they were used to mount the location lights at the various press sub-centers within the Olympic complex. ■

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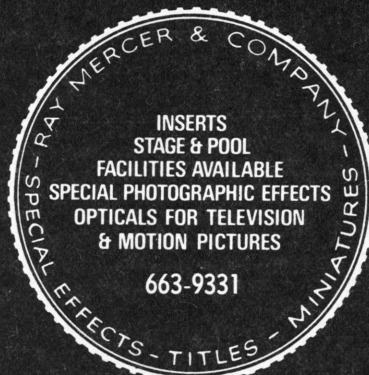
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## ANGENIEUX INTRODUCES NEW "ULTIMATE" LENSES Continued from Page 1254

### 3-ZOOM SYSTEM WITH EXTREMELY HIGH APERTURE F 12-74mm T/1.4

The mounting of 0.75 x Retro-zoom and 1.66 x Tele attachments by bayonet fitting to the front of the new Angenieux 2.8 x 16 T/1.3 zoom lens, expands the available focal length, to an almost continuous range of 12 to 74mm without losing the extraordinary aperture of T/1.3.

This Angenieux zoom system is of remarkable optical quality and yet allows color filming at lighting levels under 50 lux when using 400 ASA film stock.

All requirements of "cinéma vérité" for lens angles, light level, and superior optical performance can therefore be fully met.

### 4-OTHER ZOOM LENS SYSTEMS:

In the same manner, the widely used and accepted "classic" Angenieux zoom lenses 10 x 12 and 15 x 10 can be fitted with the same .75 x Retro-zoom and 1.66 x Tele attachments, thus providing the following Angenieux systems:

F 9-200mm T/2.5  
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### 35mm MOTION PICTURE

The new Angenieux 25 x 25 F 25-625mm, T/4-T/8 will be available early 1981.

This is the first lens for 35mm motion picture to offer such a high continuous zoom range of 25 x and will provide great flexibility for tele shots. In addition it also

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features:

- minimum focusing distance of 1.3 metres from film plane. This will be of great value for the production of commercials, documentaries, and many other types of films.
- high aperture of  $T/8$  at a focal length of  $F = 625\text{mm}$ —of particular use for outdoors location shooting.
- reduced size and weight (less than 6 kg, or 14 lbs), and traditional flawless reliability make it totally suitable for integration into the most mobile equipment.

#### SUPER-8

The new Angenieux 15 x 6 F 6-90mm  $f/1.4$  zoom provides the most sophisticated Super-8 cinematographer with all the facilities for completely successful filmmaking:

- large zoom range of 15 x, the highest available in the market
- wide horizontal angle of  $50^\circ$
- the possibility to zoom, without any loss of focus, between  $F = 40$  and 90mm in the Macro position, and therefore fill the entire screen with an object as small as  $25 \times 33\text{mm}$ !
- aperture of  $f/1.4$  plus high efficiency optional coatings allow shooting in the most marginal light conditions.

#### IDI INTRODUCES HELICO CAMERA STABILIZER

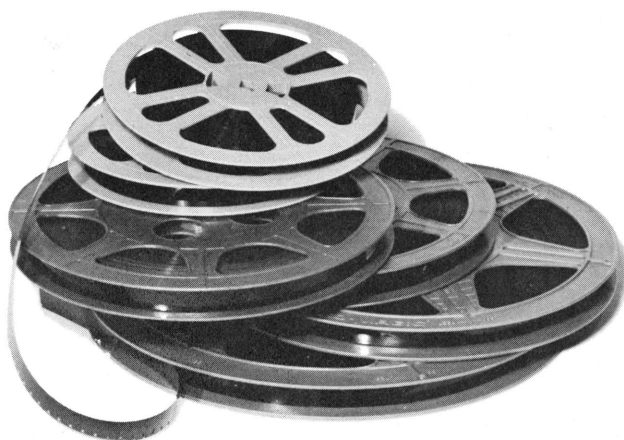
Continued from Page 1240

camera support platform—which can be adjusted so that the camera pivots around its center of gravity—is supported from the center of a patented IDI Helico vibration-dampening cylinder. This cylinder contains a series of precision machined tracks that integrate their bearing-supported movement to provide lateral travel in any direction.

This movement carries a vertically supported shaft that is also spring-loaded. This apparatus permits the aircraft to "vibrate around the camera." The entire dampening assembly is ball-joint connected to a slider sleeve that rides on silent bearings the length of a heavily-chromed steel bar suspended, for example, across the doorway of a helicopter. Each end of this bar is inserted in the socket portion of a variety of anodized aluminum mounting plates to fit virtually any helicopter that popularly serves as a camera ship. In most cases, the mounting plates are fixed in the helicopter by using screws and holes that already exist as part of the helicopter's design.

The Helico I should see a great deal of activity with the many television stations currently using helicopters in their news and production operations, particularly on fast-breaking news stores where lack

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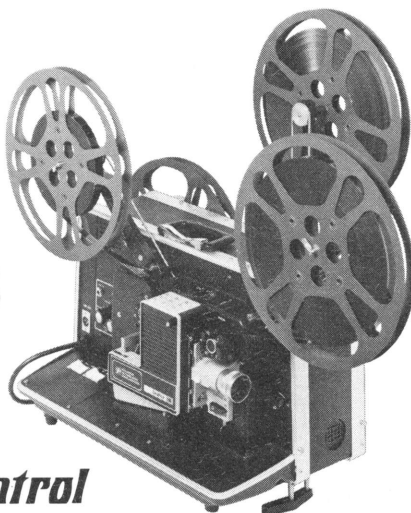
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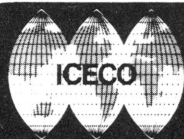
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The Helico II is a pedestal supported camera stabilizing system with adjustable spring and pneumatic dampening for eliminating vertical shock and vibration.

of time prohibits installation of more complicated conventional mounting systems. Also, many television cameramen end up hanging out the door of the aircraft with a hand-held camera and this mode of operation certainly leaves a lot to be desired with regard to both safety and results. Many station executives frown upon the idea of permanently installed helicopter camera mounting hardware which could interfere with the other uses of the helicopter.

### Quick In and Out

The bracketry for the IDI Helico I can be installed in most helicopters in a few minutes. The mounting bar has an extensible end unit. Once installed it is unobtrusive and in no way inhibits the use of the helicopter for other purposes. With the brackets installed, the time required to put the rest of the system in the helicopter is reduced to about two minutes. This installation results in minimum tie-up time for expensive aircraft and provides a time-efficient method of mounting cameras for fast breaking stories.

### Helico II

The Helico II is a pedestal supported system with adjustable spring and pneumatic dampening for eliminating vertical shock and vibration and is sup-

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ported from its base by a patented rubber compound bedded universal joint. This reduces lateral shocks and vibration. The base plates, designed to attach to the seatbelt mounting points in helicopters, enable Helico II to be used successfully in pickup trucks, jeeps, automobiles and even in ski boats.

#### Rental or Sale

For the first time, an effective vibration-free camera support system is available to any purchaser. The IDI Helico systems will be sold through major equipment dealers in the U.S. and around the world. Image Devices is exclusive distributor.

There is no comparable system currently available for sale anywhere. Maintenance overhead necessary to keep the IDI Helico in prime operating condition is practically nil. These units will appeal to producers, rental houses, TV stations, universities, and government operations.

For further information on rental, sales, leasing, or dealerships for the IDI Helico Camera Stabilizing Systems, please contact Image Devices, Steve Brinson, 1651 Phoenix Blvd., Atlanta, GA 30349 USA, phone 404/996-0000 or Bill Reiter, 1825 NE 149 St., Miami, FL 33181 USA, phone 305/945-1111.

#### PROFESSIONAL SUPER-8 AT PHOTOKINA 1980

##### Continued from Page 1281

cartridge. Of all the Super-8 cameras at the show, this had to be the most comfortable to hold. The sound level of the camera is very low—a rarity in Super-8 cameras. The camera is also being marketed in a profi-kit similar to the Bauer S409. No crystal conversions are available at this date.

#### BAUER

New from Bauer was the C109, boasting a 6mm-51mm, f/1.2 zoom. A very interesting camera, considering its low price. The S615XL microcomputer with its 6mm-90mm Angenieux lens has been retained, as has the S709XL microcomputer, which is being marketed in a profi-kit, including case, matte box, and many other accessories. Crystal conversions are available for all three of these cameras by Super8 Sound, Inc.

#### AATON

The most inspiring news to the professional Super-8 filmmaker was Aaton's disclosure of plans to market a Super 8mm camera. At this moment details are sketchy, but if all goes well we should see a working prototype with a 400-foot film capacity, crystal control, over-the-shoulder design that would interface with

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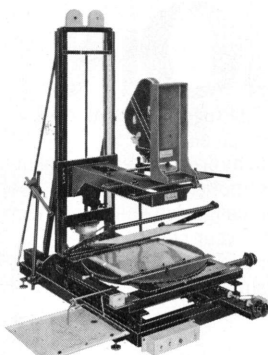
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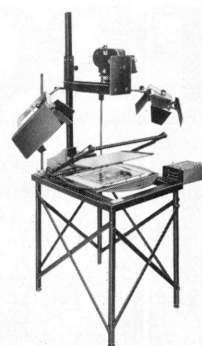
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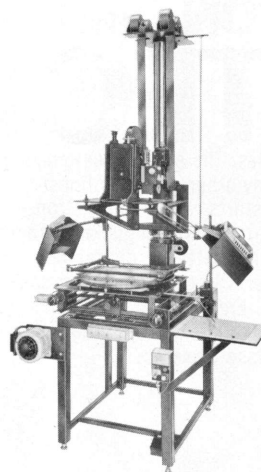


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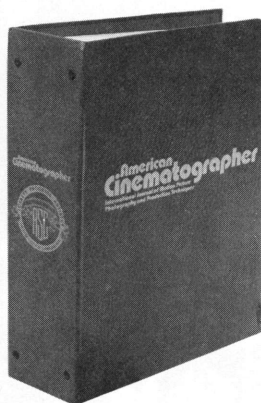


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the Aaton Scribe and time code marking system at the 1982 Photokina.

#### SUMMARY

With the exception of a need for quieter cameras, Super 8mm has become a completely professional system. Five years ago if anyone had suggested I would be doing 75% of my professional work in Super-8 I'd have cut off their liquor supply. I now find that with the improved video interface, Super-8 can compete with the most expensive video cameras. Interformat lab in San Francisco, has even done Super 8mm to 35mm blowups which compare well with some 16mm to 35mm blowups I have seen. Super-8 as a professional medium is not all things yet . . . but it's getting very close. ■

#### EYE WITNESS REPORT FROM PHOTOKINA '80 Continued from Page 1277

bar.

The Helico II is a pedestal supported system with adjustable spring and pneumatic dampening for eliminating vertical shock and vibration, and is supported from its base by a patented rubber compound bedded universal joint. This reduces lateral shocks and vibration.

David Haylock, the bossman of Image Devices and an old friend, tells me that he is about to launch a test flight of the Helico I in a helicopter off the roof of Hall 14. He asks me if I want to be the first to fly it. I just live for invitations like that, so the next thing I know I am being strapped into the helicopter behind a video camera mounted on Helico I.

Then it's up, up and away over Cologne. The Helico I is certainly not a Tyler or Continental mount, but the compact device certainly does dampen vibration as advertised and I am able to maneuver the camera very smoothly.

As I travel about Hall 13 at PHOTOKINA, I come upon many small bits and pieces of equipment that could prove valuable to the filmmaker. Obviously, one can not cover every item in this limited space, and many of the more important pieces, not mentioned here, are treated in depth elsewhere in these pages.

In summary I should like to say that while 1980 may not be a vintage year for PHOTOKINA, it will be noted as the year in which three new 35mm motion picture cameras made their debut and HMI lighting came into its own for photographic purposes.

In any event, the World's Fair of Photography remains the most important showcase for new equipment of interest to filmmakers everywhere, and it is well worth whatever it takes to get there. ■

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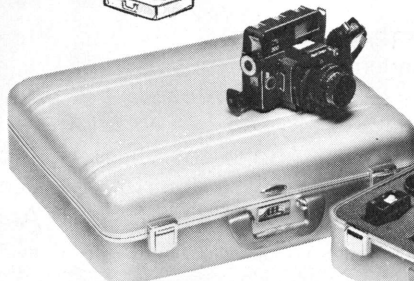
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zoom hand grip.

The zoom range can be steplessly adjusted between 0.8 seconds and 6 minutes.

The dimensions of the zoom drive are small and with its low weight, it is ideally suited for hand held shooting.

The zoom hand grip has an anatomical form which favours shooting without tiring. The zoom speed, as well as forward and reverse movement, are adjusted via the thumb knob. The governor and control electronics, as well as the adjustment unit and the electrical camera release, are in the hand grip. The hand grip extension (Cat. No. 4513) can also be used with the ARRIFLEX 16 SR.

The motor mount with motor can be fixed to either the support rods of the light-weight support or to the ARRIFLEX bridge plates (Cat. No. 4517 or 3770).

The zoom drive is fed from the 12 V camera battery via a spiral cable. A second, plug-in cable connects the hand grip to the zoom motor.

#### ARRIFLEX 16 SR FLEXIBLE CABLE WITH BUCKLE PROTECTION

The protecting collar prevents damage to the flexible cable for the automatic diaphragm when the camera is carelessly set down on its base. This can always happen when the universal hand grip with its flexible cable is fixed in a position lower than the camera base.

This part can be fitted to existing cables.

#### ARRIFLEX 35 III CAMERA DOOR WITH VIDEO UNIT

The video unit enables, before and during shooting, additional picture-true observation of the viewfinder image on any desired number of monitors.

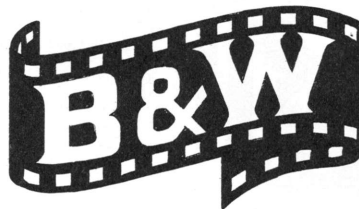
The adaptation for the video unit is carried out on the camera door with rigid viewfinder after removing the square cover plate, or, as the case may be, the interchangeable anamorphic lens element.

Additionally, there is now available a new camera door with rigid angular viewfinder which can be changed via a quick-change hinge. This new camera door provides a favourable distribution of weight which makes hand held shooting easier and less tiring.

#### SWIVEL MOUNT FOR ARRI IMAGE STABILIZER

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Image Stabilizer's side flange is fastened, can, according to whichever camera is being used, be moved to the right and left, upwards and downwards, thus enabling the Image Stabilizer to be positioned on the optical axis of the lens. The vertical and the horizontal adjustment range is approx  $\pm 30\text{mm}$ . When used with the 16 SR both adjusting slides are in their middle position. The required adjustment can be secured by tightening the clamp screws.

The mounting support offers the advantage that the Stabilizer, which is attached to it, can be swivelled away from the taking lens: for example, when Vario lenses must be set at a short focal length, as it is possible that when working with a positioned Stabilizer vignetting might occur. The cameraman can also quickly change lenses without any problem. The supporting arm can be fixed at its extreme positions, so that during shooting the Stabilizer does not fall backwards or forwards.

The mount is fixed to the support rails of the bridge plate or to the support rails of the new ARRIFLEX light-weight support.

The support is so constructed that it ensures that the Stabilizer remains completely steady even under the most difficult of conditions. Even with this most robust of constructions, the complete mount weighs only 850 g.

Additionally, the Stabilizer now has a  $3/8"$  thread on its upper side to enable an even steadier connection between the Stabilizer and taking camera. How this connection is made must be worked out depending on which camera is being used.

## AG POTENTIAL CONTROL FOR ARRI SILVER RECOVERY PLANTS

With this newly developed, regulated Ag potential control for ARRI silver recovery plants, the galvanic current is automatically adjusted depending on the silver content of the fixing bath. The silver content of the fixing bath is determined by measuring the ionic activity with an electrode plate. The measurements taken are transferred via a regulator into an electrolytic current of the level required. With this control unit the required middle silver content, ranging upwards from 0.1 g per fixing bath litre, can be selected. The desired silver content of the solution can be selected on a control panel. The galvanic current strength, if required, can also be set manually. Additionally, the units enable circulation without desilvering. The operation of complete desilvering takes place without circulation of the solution.

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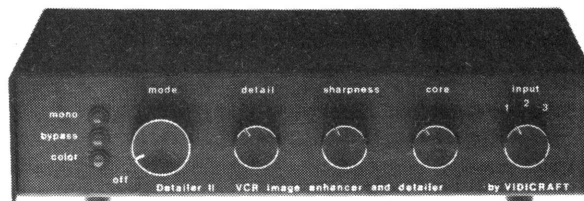
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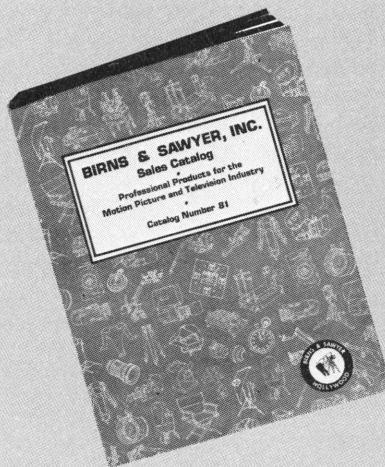
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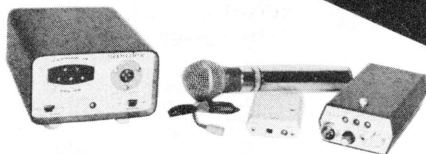
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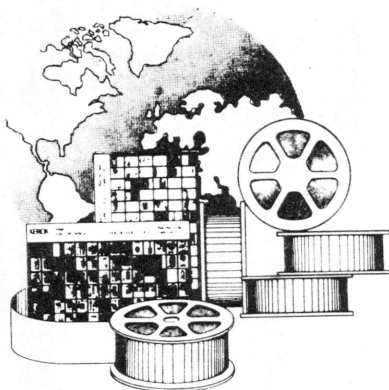
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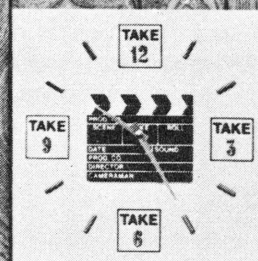
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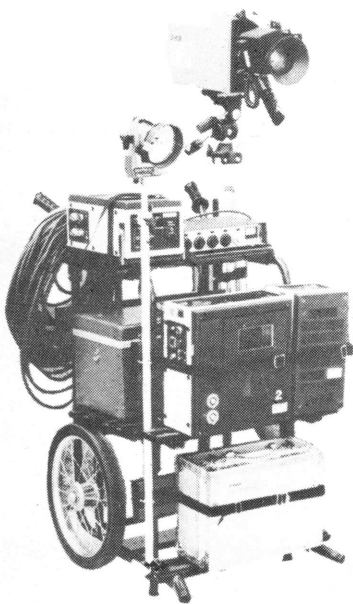
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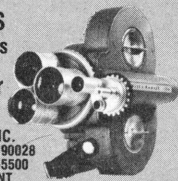
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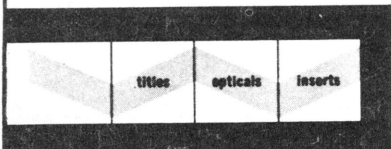
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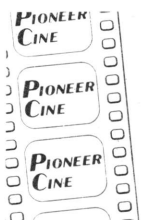
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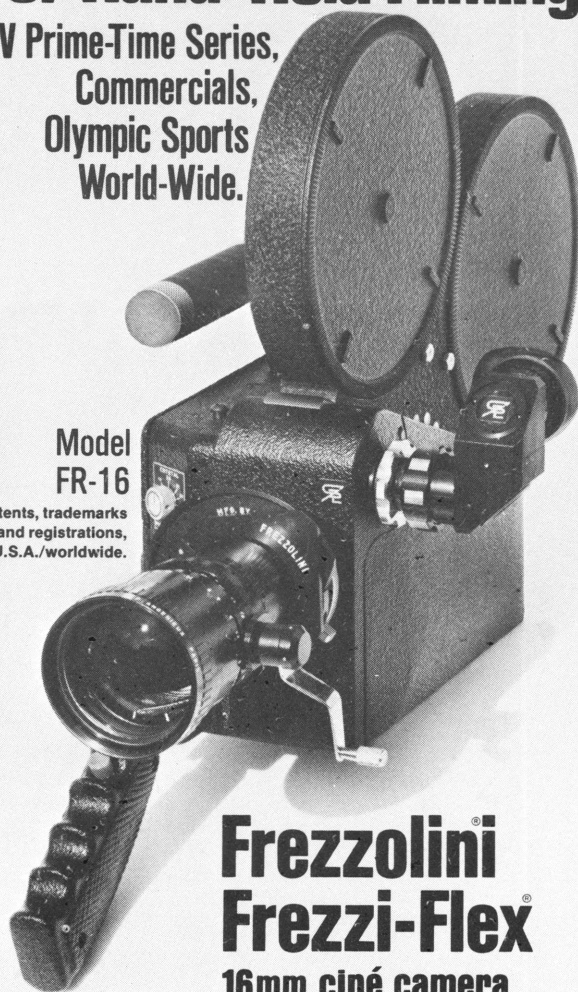
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